JANUARY 1961

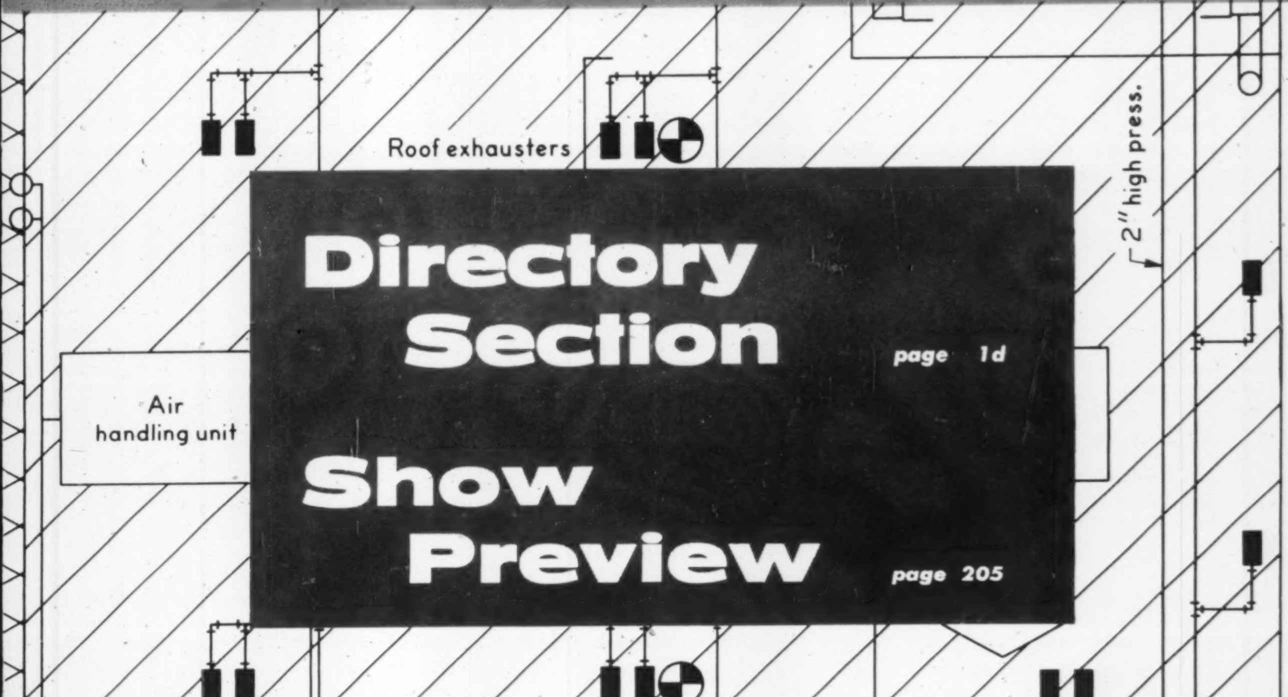
ENGINEERING DATA FILE

How To Apply High Intensity Infrared Heaters for Comfort Heating
. . . page 229

Contents . . . . page 5
Letter from the Editor . . . . page 11
You'll Want to Know . . . . page 59
"Open for Discussion" . . . . . page 135
Question of the Month . . . . . page 144

Heating Piping & Air Conditioning

. . . for Consulting Engineers • Mechanical (Heating, Piping, and Air Conditioning) Contractors • Engineers with Plants and Big Buildings



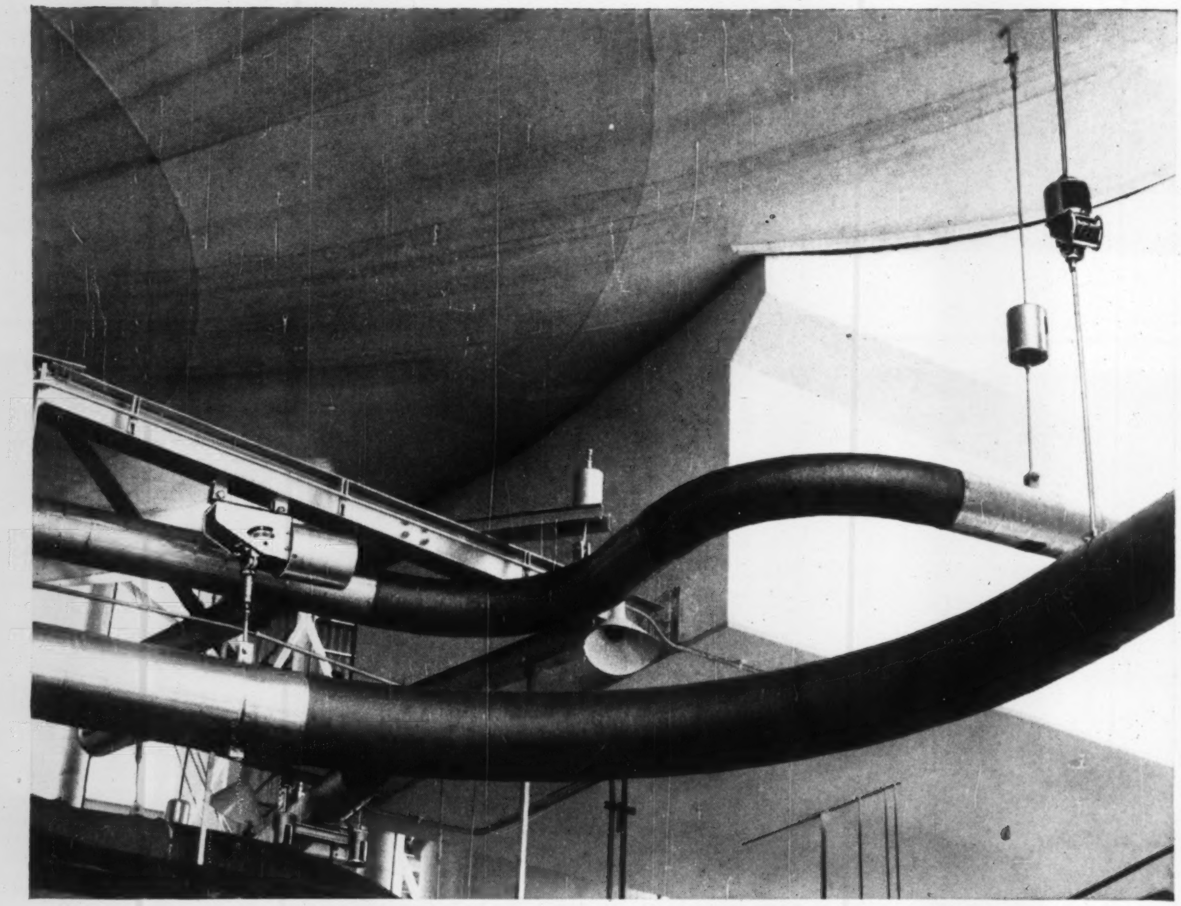
Roof exhausters
Air handling unit
2" high press.
2" high press.
2 1/2" low press.

Directory Section

page 1d

Show Preview

page 205



Grinnell Spring Hangers support the pipes carrying steam from the heat exchangers to the turbines.

Grinnell Hangers cradle high-pressure piping at new Yankee Atomic Power Plant

At the new Yankee Atomic Power Plant in Rowe, Mass., uranium fuel in the nuclear reactor keeps the water which flows through the reactor at about 500°F. This pressurized water, at 2,000 pounds per square inch pressure, transfers the heat through piping to a steam generator where steam is produced for running power turbines.

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Grinnell Constant Support Hangers are used where reactive forces at terminal points must be kept within specified limits. Grinnell Variable* Spring Hangers are used where piping is subject to vertical movement and does not require a constant support type.

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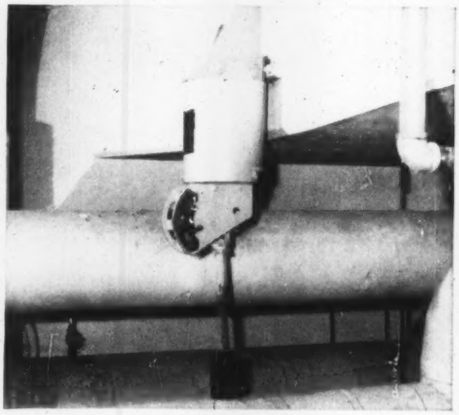

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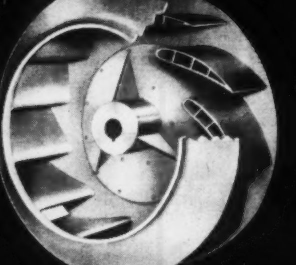

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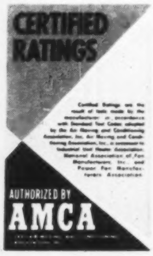

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Heating, Piping & Air Conditioning

FOR CONSULTING ENGINEERS, MECHANICAL (HEATING, PIPING, AND AIR CONDITIONING) CONTRACTORS, ENGINEERS WITH PLANTS AND BIG BUILDINGS

VOL. 33, NO. 1 JANUARY 1961

FEATURES

How to Select High Temperature Hot Water Control Valves 153
Hospitals: A Challenge to Air Conditioning Engineers 158
Good Piping Cost Estimates Demand Basic Understanding of Terms 162
How to Apply Slotted Duct Air Distribution 166
Proposed: A One-Pipe Brine Distribution System 171
What to Consider in Evaluating Centrifugal Fans in Air Handling Equipment 174
Glass Reinforced Plastic Piping and What You Should Know About It 182
An Economic Analysis of Cost for Redwood Cooling Tower Packings 187
What to Expect from Electronic Control Systems 195
The Law and Your Profits: "Attractive Nuisance" Doctrine Protects Small Children 202

DATA SHEET

Chart Compares Solvent Vapor Concentrations in Ambient and Exhaust Air 203

SHOW SECTION

Preview of Heating and Air Conditioning Show 205

HPAC ENGINEERING DATA FILE

How to Apply High Intensity Infrared Heaters for Comfort Heating 229

DIRECTORY SECTION *(Opposite page 394)*

Part 1—Products Advertised in This Issue 3d
Part 2—All Products Classified 11d
Part 3—All Trade Names 136d
Part 4—All Manufacturers' Addresses 163d

DEPARTMENTS

Letter from the Editor 11
You'll Want to Know 59
"Open for Discussion" 135
Question of the Month 144
Equipment Developments 263
Recent Trade Literature 348
We Hear That 366
Who's What 370
In the Territories 376
Meetings and Conventions 386
New Books and Reports 388
Index to Advertisers 2d

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TRIPLING *a shower room's* CAPACITY *with emphasis on safety .*

Imaginative engineering found a "better way of doing things" to solve the problem of overcrowded locker and shower room conditions at Niles Township East Community High School. Not only was locker space greatly increased and shower capacity tripled—the shower room itself was provided with major safety benefits, practically foolproof water temperature regulation and economy of operation.

The showers are the progressive type, used primarily for warming up or cooling down on entry or exit to pool or gym. Located in what was once unused space, they are arranged in three double tiers, one set at 95°, one at 100° and the other at 105° by means of three Powers Hydroguard Thermostatic Controls.

Showers are operated from a convenient panel to which only the instructor has access. Here, through an "on" button, a timer actuates three valves connected to the Hydroguards to limit water flow to 10 minutes. The shower system can be shut off at any time by depressing an "off" button which automatically re-cycles the timer. In addition, individual switches for each tier provide manual operation when desired.

Core of the system is the Powers Hydroguards, set to the previously mentioned water temperatures. The Hydroguards protect the bathers at all times against temperature fluctuations that might cause scalding or other mishaps. Should either the hot or cold water supply fail, they immediately shut off the showers.

From an operational standpoint, four-year figures show that controlled timing and controlled temperature can lower a school's budget through water and fuel conservation.

Niles Township East Community High School

Architect: Edwin C. Bruno, A.I.A., Skokie, Ill.

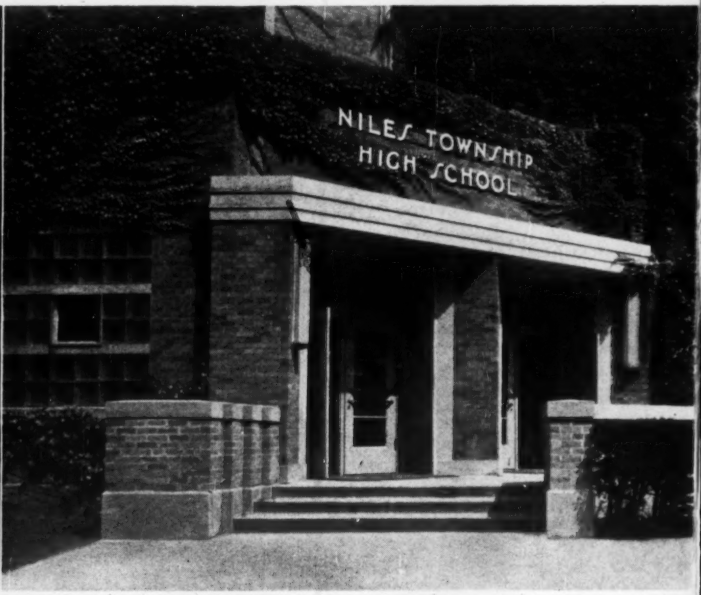
Consulting Engineer: John S. Horner, Libertyville, Ill.

Plumbing Contractor: Chas. Conrick Co., Chicago, Ill.

Head Custodian: Jules P. Roels

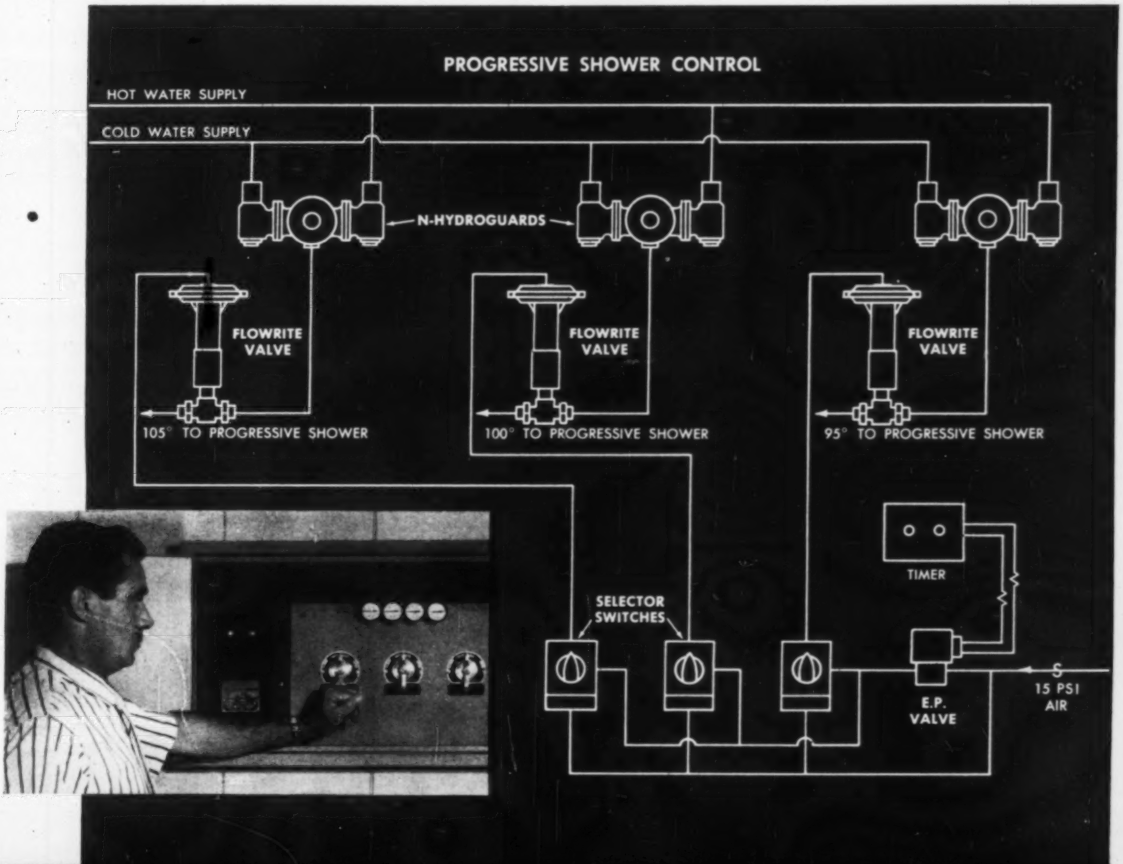
Upper photo on facing page shows Jules P. Roels at the operating panel.

In lower photo, John S. Horner and Edwin C. Bruno stand at pool end of shower.



Why not investigate a Hydroguard Shower System for your school? Just tell us about your requirements and we'll make recommendations with no obligations attached. For general information request *Safer Showers* Bulletin.

Also: POWERS TEMPERATURE AND HUMIDITY CONTROLS. Ask for case histories illustrating how Powers equipment has been engineered to individual needs to spark new ideas in indoor comfort and environment.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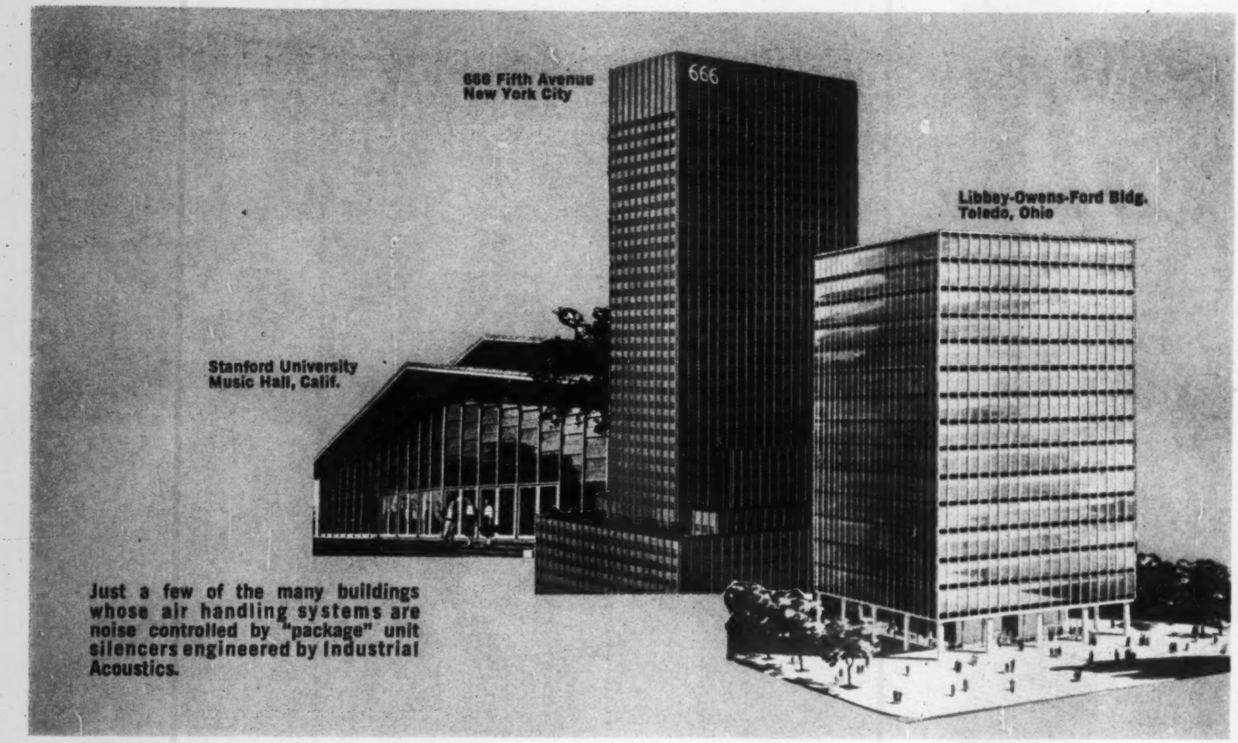
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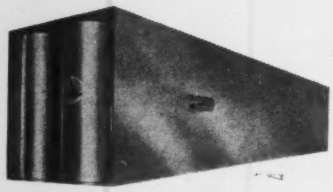
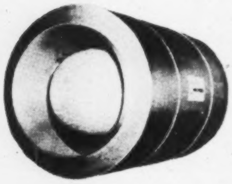
Just a few of the many buildings whose air handling systems are noise controlled by "package" unit silencers engineered by Industrial Acoustics.





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Fan Noise CONTROLLED in Air Handling Systems QUICKLY & ACCURATELY in less than 5 minutes!

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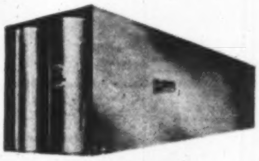
Guesstimating has now been eliminated by the general acceptance of these 4 important steps, functions and/or considerations: (1) that the total fan noise and its spectrum is substantially per the ASHRAE GUIDE dated 1957 or later (2) that we now have workable data covering the natural noise reduction due to ductwork, elbows, splits, distances, end reflections, room absorptions, etc. (3) that we have NC and NCA criteria for each of the 8 octave bands for most types of areas and we can now specify what is desired, and more important, by using an octave band analyzer, it can be readily determined whether the specified criteria has or has not been met (4) the development of prefabricated noise reduction units (noise traps, sound traps, etc) which have been properly factory tested and rated so they can be used with the method mentioned above.

"Short Form" Makes Selection Easy

Since that time, because of the progress made in the design of Quiet-DUCT Silencers, and the wide acceptance of newly developed techniques mentioned above, the "Short Form" has been developed to make the selection of unit silencers for air handling systems an easy matter.



QUIET-DUCT SILENCERS
4 STANDARD MODELS
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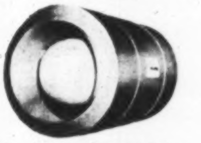
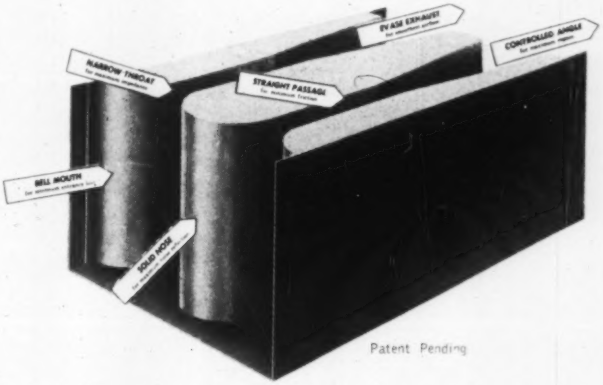


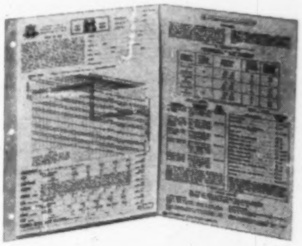
CONIC-FLOW SILENCERS
18 STANDARD UNIT SIZES

"Cut-Away" View Reveals New Design of "Packaged" Quiet-DUCT Silencers.



Over ten years of experience in controlling noise in air handling systems has resulted in this new, basic design for all "packaged" silencers manufactured by our company. Design requirements include: *Bell Mouth Entrance* for minimum air pressure loss; *Solid Nose* for maximum noise reflection; *Narrow Throat* for maximum noise impedance. *Straight Passages* provide smoother airflow with more silencing and less regenerated noise. *Less Pressure Drop* is achieved by the diverging design of the evasè exhaust, keeping turbulence at a minimum and attaining maximum pressure regain.

The "SHORT FORM" consists of a small binder containing a pad of 25 reproducible work sheets. Only one such sheet is necessary to quickly and accurately resolve each noise problem and determine whether silencers are required, and if so, the silencer model needed to provide the Noise Reduction required for the problem. The "SHORT FORM" gives the Noise Reduction required in the 3rd octave band (in decibels) based on the data and procedures published in the ASHRAE GUIDE & DATA BOOK. Many field experiences have demonstrated that 3rd band calculations, by themselves, are a reliable index to silencing requirements as related to air handling systems. Because of the inherent characteristics of the "packaged" Quiet-DUCT silencers — if silencing is required in the 3rd Band, and the unit silencer is selected based on this criteria, more than enough noise reduction will be provided for all other bands as well.
The "SHORT FORM" is available through our representatives or write direct.



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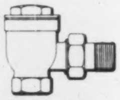
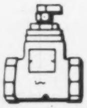


Radiator Traps



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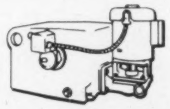
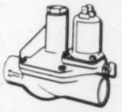
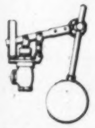


Condensation Pumps



Zonal Valves



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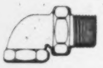

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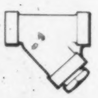

Strainers

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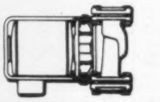

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LETTER FROM THE EDITOR

January 1961

Dear Reader:

Sizing the control valves for a high temperature hot water heating system is a very critical matter in assuring proper operation of these systems. Because of this, we asked Joseph P. O'F. Lynam to prepare the article beginning on page 153 in which he could refer to his wealth of design experience with HTHW systems. Mr. Lynam explains his analysis and procedure for sizing these valves by pointing out why the control valve furthest from the boiler is the most crucial one and why a thorough analysis of the conditions at this point is essential. If the valve is sized by "rules of thumb," it may not be able to maintain the desired control when other services on the line decrease, or at overload conditions. Therefore, the sizing of these control valves should proceed by calculating the pressure drop across the furthest valve under all conditions of operation. Of course the length of the longest feeder main has a great effect on the sizing of these two-way modulating control valves in the direct-return type of system generally used for HTHW applications and this should be considered carefully. Mr. Lynam has included several practical tips on this subject in his article which is really worth your consideration.

The evaluation of air conditioning systems for hospital applications is not easy when so many factors must be considered as are necessary in these cases. John A. Holbrook has prepared such an evaluation and it is presented on page 158. This information will be helpful in determining the type of air conditioning system most suitable for both new and existing hospitals as it takes into account the many requirements in providing the proper environment. Mr. Holbrook explains how each of the systems commonly used can be expected to serve these needs. Also included in his article is a comparative cost chart for each of the systems that should prove to be very helpful.

Are you satisfied with your piping estimating data? Whether you are or not, I hope you will read the article on this subject by John Mark on pages 162 to 165. We all know how important good estimating data is and how very difficult it is to obtain. Good cost estimates require an understanding of definitions of such basic terms as man hours expended in relation to the proper assignment of labor time units to individual items such as flanges, fittings, valves, and system erection. All these must be related to the factors which will affect a difference in cost such as the physical location of the installation. Mr. Mark presents two examples with five different estimates of man hours required to install these systems with some variation between the five estimates. How would you estimate the installation of these two systems? I would like to hear from you on this because Mr. Mark has agreed to correlate the answers and present them later in an effort to strengthen the existing data on this subject.

The economics of using long narrow slot type discharge outlets for some air distribution applications is certainly worth considering. To realize the advantages of low initial cost and to make such a system effective, certain principles must be followed in the design of the duct and slot. F. F. Stevenson explains the principles that must be considered and how to properly size the slot on page 166.

The typical two-pipe reverse-return system has certain inherent disadvantages which may cause problems in some refrigerant piping systems. Herman Vetter presents a proposal for a one-pipe system design in his article on page 171 which provides some advantages. He shows how the one-pipe system affords the advantages of placing no limit on the percentage of heat transfer fluid which may be directed to any one unit, how the flow may be varied to any one unit and yet not affect the others on the same line, and how greater heat transfer by means of greater flow and higher velocity can be achieved.

LETTER FROM THE EDITOR (continued) --

How a centrifugal fan delivers air under all kinds of conditions is explained by R. H. Seibert in his article on page 174. Mr. Seibert presents an excellent summary of basic information dealing with the effects of fan speed and system resistance changes in centrifugal fan operation. He shows how to avoid the pitfalls of some common errors in the use of fan performance and rating tables and how to select the right fan for particular applications. I'm sure you'll find this article to be of interest.

The use of plastic piping for process piping applications where corrosion resistance is a major requirement is increasing, and to realize the advantages of using this type of piping materials, there are several facts that you should know. R. M. Levy explains these in his article on page 182 by providing basic information on both plastic and glass properties, the structural and performance characteristics of glass reinforced plastic piping, and he also shows how this pipe may be tested in the field. Permissible temperature and pressure ranges for this type of piping system are also included for 10 different corrosive fluids.

On page 187 you will find a valuable economic analysis of costs for cooling tower packings as prepared by W. W. Smith and G. F. Hallett. The purchase of large equipment items for water cooling installations presents a problem that must be solved on a twofold basis. One of these, of course, is the initial costs, and the other is the expected operating costs. The authors point out that it is unrealistic to consider the cost of just one part of the equipment on an individual basis. Only the use of cost figures which are directly related to all cost variables that will be encountered in the entire installation will give a true picture of the owning and operating expense of the part being studied. The authors present an equation that may be used in determining the true evaluated cost of redwood cooling tower packings of various shapes, together with the results of experiments conducted at the Texas Engineering Experiment Station. These results have been used in establishing the suggested cost determining method and should be of value to you.

Don Bahnfleth has prepared another interesting Engineering Data File this month on high intensity infrared radiant heating which begins on page 229. This feature explains how these infrared radiant heaters are being used successfully and why they are doing the job for which they are intended. The high intensity infrared heater is a useful heating tool and is being used in a number of applications for comfort heating. It can project from 50 to 80 percent of its total heat input to the floor without requiring air motion. The initial and operating costs are low when properly applied, and these heaters can be arranged to provide different levels of comfort over limited areas or spots in a space, or they can be arranged to provide comfort throughout an entire area. Don't miss this valuable report.

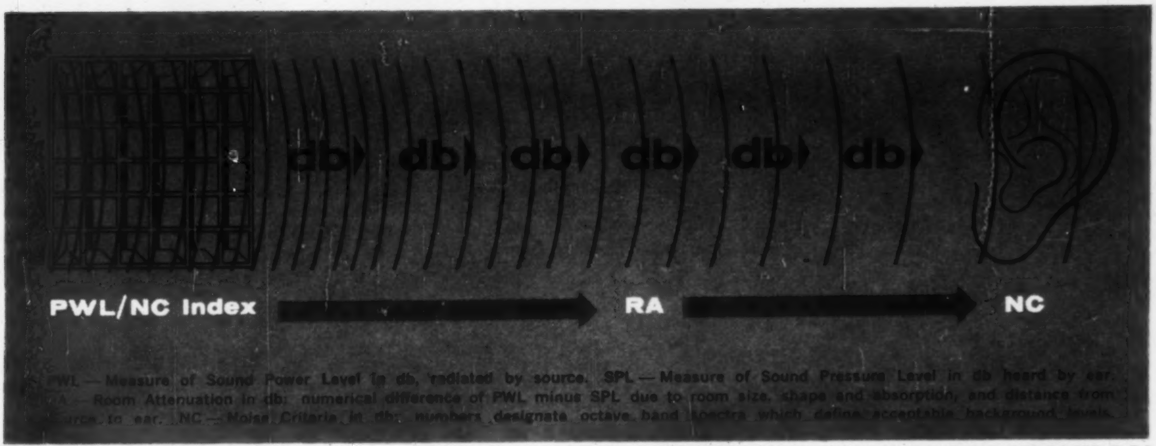
You'll find the complete Directory Section of heating, piping, and air conditioning equipment for industrial, commercial, institutional, and public buildings in the yellow pages at the back of this issue as in every January issue. Each year, the listings are checked and brought up to date. I know you will want to keep it for use throughout 1961.

There's another special section this month, too. It is the complete preview of the 15th International Heating & Air Conditioning Exposition to be held in Chicago on February 13th to 16th. If you are planning to attend this show, you will find the listing of exhibitors and what they will be exhibiting a time saver at Chicago.

Many interesting news items and other short notices about applications appear in You'll Want to Know on pages 59 to 66. "Open for Discussion" pages begin on 135. Question of the Month starts on page 144 and contains two answers to two questions asked previously by HPAC readers.

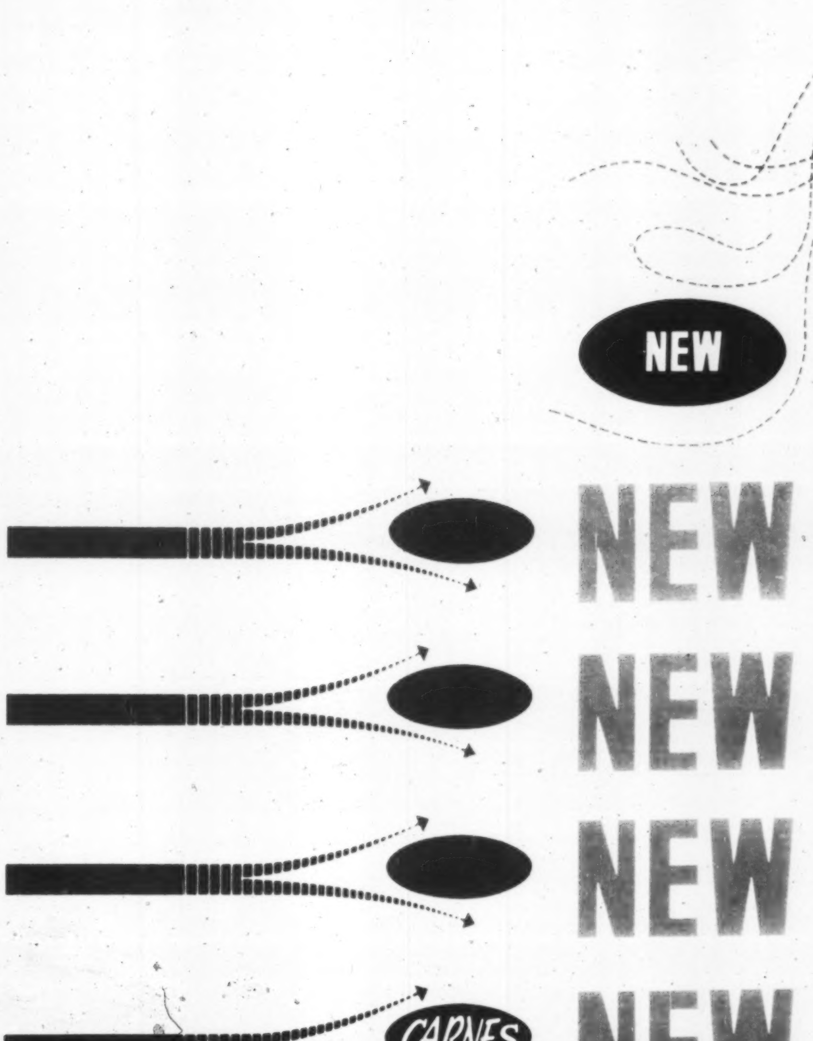
Bob Roose

Editor, HEATING, PIPING & AIR CONDITIONING



PWL — Measure of Sound Power Level in db, radiated by source. SPL — Measure of Sound Pressure Level in db heard by ear. RA — Room Attenuation in db: numerical difference of PWL minus SPL due to room size, shape and absorption, and distance from source to ear. NC — Noise Criteria in db: numbers designate octave band spectra which define acceptable background levels.

LEADERS GO TO CARNES FOR THE NEWEST IN AIR DISTRIBUTION



First Simplified Comparable Sound Rating Method

PWL/NC INDEX

CARNES PUBLISHED ITS NEW CONCEPT IN 1959.

The old rating method of judging units — based on the "A" Scale or Sound Pressure Level (SPL) as heard by the ear from a non-standard distance in a non-standard room . . . yielded non-comparable values, and for comparable rating of manufacturers' units is all but useless.
Carnes' method eliminates those variables and rates the Sound Power Level (PWL) radiated by the source at the source. This workable, simple, easy to use method permits establishing a single number for rating performance, yet covers the pertinent information which makes the octave band analysis desirable. PWL/NC Index is a number assigned to the PWL spectrum of a unit (when discharging a specified CFM) which indicates the minimum NC(PWL) curve that will not be exceeded in any band. The NC(SPL) curve which will not be exceeded in any band will be the PWL/NC Index minus Room Attenuation. Carnes' facilities and techniques are in accord with the standards which have been proposed by the ASA and ASHRAE. Write for complete details on Carnes published Sound Rating Method.

Carnes manufactures High and Low-Velocity ATC Units • Modular, Round, Rectangular, Square, Convertible and Baseboard Diffusers • Registers • Grilles • Roof and Wall Ventilators.

CARNES CORPORATION, VERONA, WISCONSIN

SONOCO PRODUCTS COMPANY

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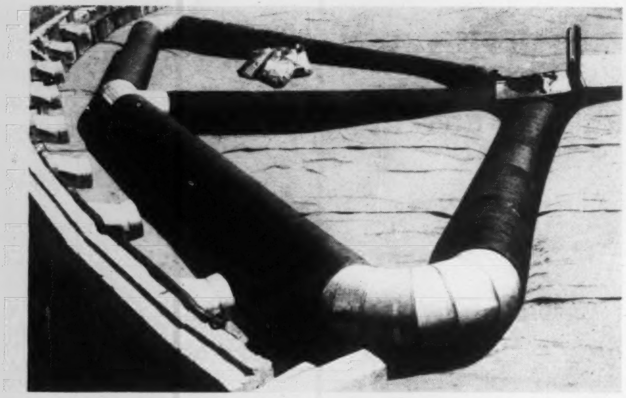


SONOCO

SONOAIRDUCT®

FIBRE DUCT

assures quality construction, saves time, labor, and money . . . in slab perimeter heating, cooling, and combination heating and cooling systems.

ADVANTAGES AND FEATURES

SONOAIRDUCT is aluminum foil-lined for lower co-efficient of air friction. The asphalt-filled outer wrap retards moisture penetration through the duct wall. This thick duct wall, coupled with the aluminum foil lining, provides an insulation value which minimizes loss of heat or cold from plenum to register. (The air friction loss of 8 in. SONOAIRDUCT is 0.151 in. of water per 100 ft. at a velocity of 800 ft. per minute. At 70°F, SONOAIRDUCT has a heat conductivity of 0.46 BTU per hour per sq. ft. per degree F per inch of thickness. This low heat loss prevents hot spots in the slab above the encased duct.) SONOAIRDUCT also possesses a sound deadening quality which minimizes transmission of noise from furnace and from room to room.

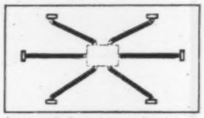
Since wall thickness increases with diameter, the high crushing strength of SONOAIRDUCT is maintained through every size. This lightweight duct will not chip, crack, or break when dropped—every piece is usable.

Sonoco SONOAIRDUCT is available in 23 sizes—2″ to 36″ I. D. Unless other lengths are specified, shipments will be made in standard lengths of 18′. Long lengths mean faster leveling and fewer joints to make and seal. This saves time, labor, and money in installation. It is easy to cut to exact length with a hand or power saw on the job. SONOAIRDUCT fits all standard metal bends, elbows, T's and registers. Joints may also be made without metal fittings by mitering the duct and using tape.

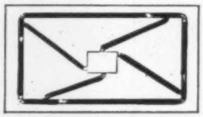
All installations should be made in accordance with SONOAIRDUCT Manual #557, which is available on request.

Sonoco SONOAIRDUCT is a round fibre duct lined with aluminum foil. A black, asphalt filled moisture-resistant exterior surface is made an integral part of the duct by a permanent bond. Waterproof adhesive is used throughout its laminated construction. It is especially designed for use as supply and return lines in gas and oil fired, slab floor perimeter heating, cooling, or combination systems, and can also be adapted for use in spot cooling and ventilating systems.

SONOAIRDUCT Fibre Duct is made by one of the largest manufacturers of paper products in the world, and is subject to the highest standards of quality control throughout the production process. It meets or exceeds all F.H.A. criteria and test requirements for products in this category.



For radial perimeter systems



For loop perimeter systems

Side Rectangular Duct	CIRCULAR EQUIVALENTS OF RECTANGULAR DUCTS FOR EQUAL FRICTION AND CAPACITY													
	6	7	8	9	10	11	12	13	14	15	16	17	18	19
6	6.6													
8	7.5	8.2	8.8											
10	8.4	9.1	9.8	10.4	10.9									
12	9.1	9.9	10.7	11.3	11.9	12.5	13.1							
14	9.8	10.7	11.5	12.2	12.9	13.5	14.2	14.7	15.3					
16	10.4	11.4	12.2	13.0	13.7	14.4	15.1	15.7	16.3	16.9	17.5			
18	11.0	11.9	12.9	13.7	14.5	15.3	16.0	16.6	17.3	17.9	18.5	19.1	19.7	
20	11.5	12.5	13.5	14.4	15.2	15.9	16.8	17.5	18.2	18.8	19.5	20.1	20.7	21.3
24	12.4	13.6	14.6	15.6	16.6	17.5	18.3	19.1	19.8	20.6	21.3	21.9	22.6	23.2
28	13.2	14.5	15.6	16.7	17.7	18.7	19.6	20.5	21.3	22.1	22.9	23.6	24.4	25.0
30	13.6	14.9	16.1	17.2	18.3	19.3	20.2	21.1	22.0	22.9	23.7	24.4	25.2	25.9
40	15.3	16.8	18.2	19.4	20.7	21.9	23.0	24.0	25.1	26.0	27.0	27.9	28.8	29.7
50	16.8	18.4	19.9	21.3	22.7	24.0	25.2	26.4	27.6	28.7	29.8	30.8	31.8	32.8
60	18.1	19.8	21.4	23.0	24.5	25.8	27.3	28.7	29.8	31.0	32.2	33.4	34.5	35.5
70	19.2	21.0	22.8	24.5	26.1	27.6	29.1	30.4	31.8	33.1	34.3	35.6	36.8	37.9

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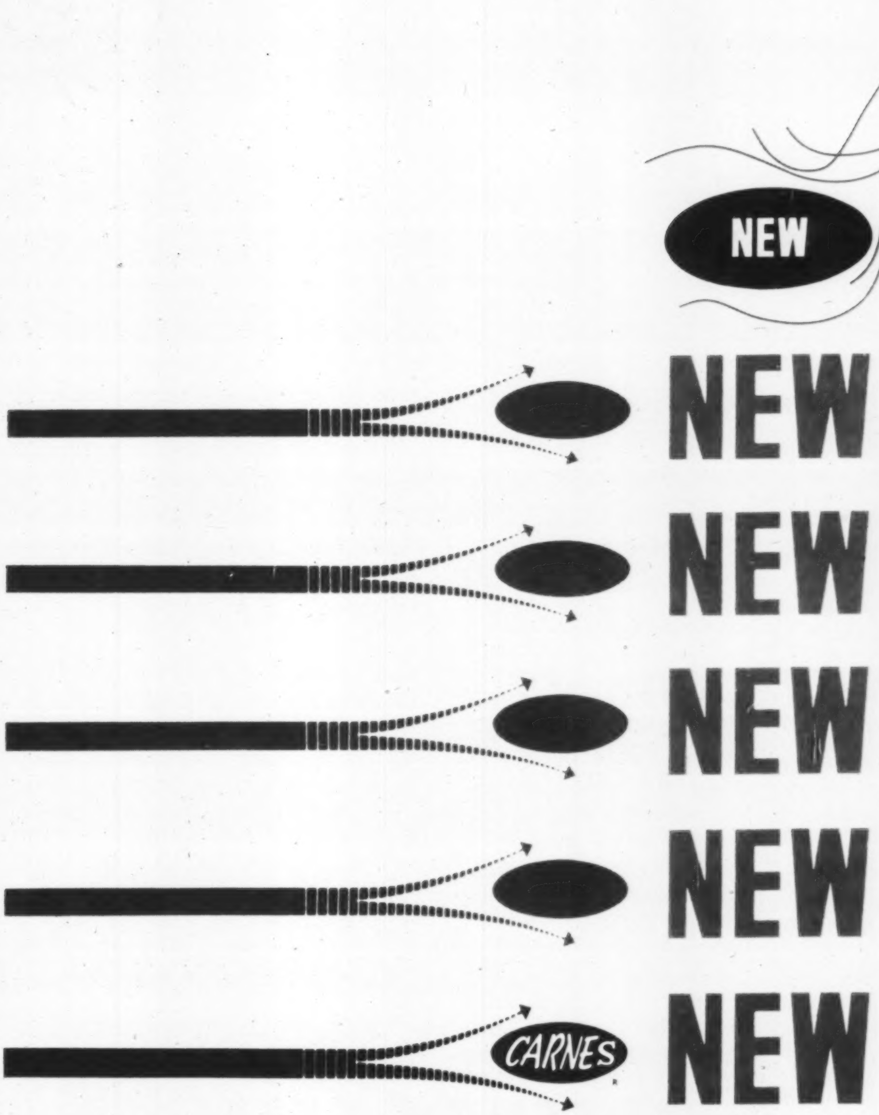
SONOAIRDUCT SIZES AND WEIGHTS

Inside Diameter	Wall Thickness	Approx. Weight Per 1,000 Feet	Approx. No. Ft. in 40 Ft. Carload
2″	.125″	272	103,032 ft.
3″	.125″	398	41,850 ft.
4″	.150″	624	25,056 ft.
5″	.150″	773	17,280 ft.
6″	.175″	1,068	11,898 ft.
7″	.200″	1,411	9,144 ft.
8″	.200″	1,606	6,984 ft.
9″	.225″	2,020	5,346 ft.
10″	.225″	2,237	4,500 ft.
11″	.225″	2,456	3,402 ft.
12″	.225″	2,676	3,024 ft.
14″	.250″	3,446	2,142 ft.
16″	.300″	4,686	1,620 ft.
18″	.300″	5,262	1,170 ft.
20″	.375″	7,249	954 ft.
22″	.375″	7,971	792 ft.
24″	.375″	8,685	702 ft.
26″	.375″	9,395	576 ft.
28″	.375″	10,108	414 ft.
30″	.400″	11,525	414 ft.
32″	.400″	12,283	324 ft.
34″	.400″	13,042	306 ft.
36″	.400″	14,136	306 ft.

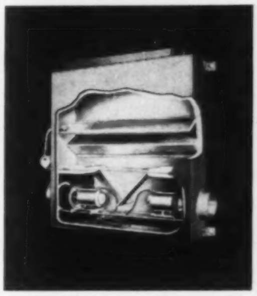
5384

Carnes engineers lick high-velocity split service problems with new simplified all-pneumatic constant volume control. Only Carnes new Acoustic Terminal Control Units offer all these features: positive temperature mixing with integral blender; full acoustic baffling; inch-thick acoustic lining; metal protection on leading edges of lining; flow path not obstructed by perforated material; accurate pressure-drop sensing tips; non-stick, leak-free resilient valve seats. 3 ATC ceiling models — end discharge . . . bottom discharge . . . multi discharge. 2 ATC window/perimeter models — front discharge . . . top discharge. All models are available in single or dual duct with full control selection.

LEADERS GO TO CARNES FOR THE NEWEST IN AIR DISTRIBUTION



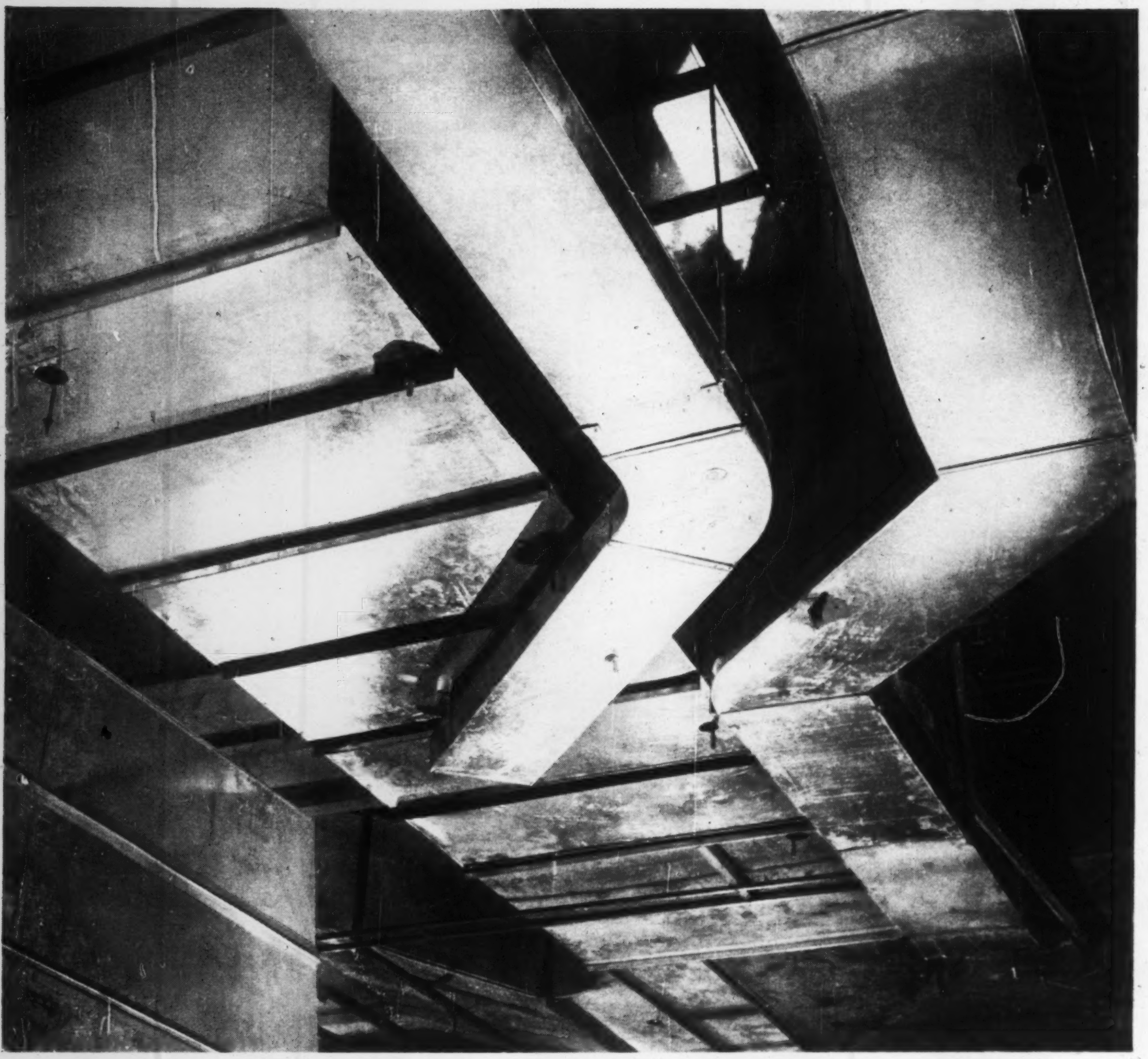
High-Velocity All-Air ATC Units



Carnes Acoustic Terminal Control Units feature new simplified all-pneumatic constant volume control with direct valve to motor connections, eliminating troublesome mechanical devices such as curtains, flappers, bladders, linkages. Carnes new ATC Units assure trouble-free lifetime operation. Investigate now. Write for ATC Catalog No. 1160.

Carnes also manufactures: Low-Velocity ATC Units • Modular, Round, Rectangular, Square, Convertible and Baseboard Diffusers • Registers • Grilles • Roof and Wall Ventilators.

CARNES CORPORATION, VERONA, WISCONSIN



Bethcon galvanized steel sheets permit long spans, minimum supports

Strong and rigid—because they're steel—Bethcon galvanized sheets form up into strong and rigid ductwork which requires a minimum number of supporting brackets.

In addition, a Bethcon galvanized steel sheet is just right for easy shopwork . . . not too hard, not too soft. That's because we use a special annealing cycle which gives the sheet an ideal balance of ductility and strength.

Bethcon's zinc coating is second to none for its refusal to flake or peel off. Bethlehem's continuous galvanizing process bonds zinc to steel so tightly that even when the sheet is doubled back on itself, the coating stays put. Hemming without puckering or wrinkling is no problem with Bethcon sheets.

You can specify Bethcon galvanized sheets in a wide variety of gages, with either plain open-hearth or copper-bearing (Beth-Cu-Loy) steel for the base metal. We'll be glad to furnish any details you need. Just get in touch with our nearest sales office.

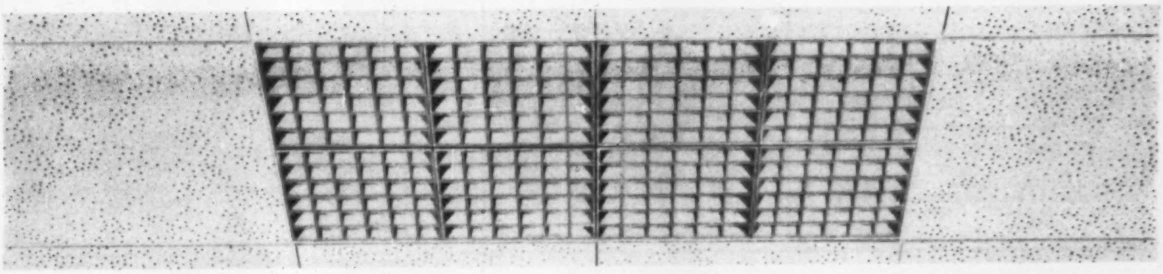
Galvanized Steel

for Strength
. . . Economy
. . . Versatility

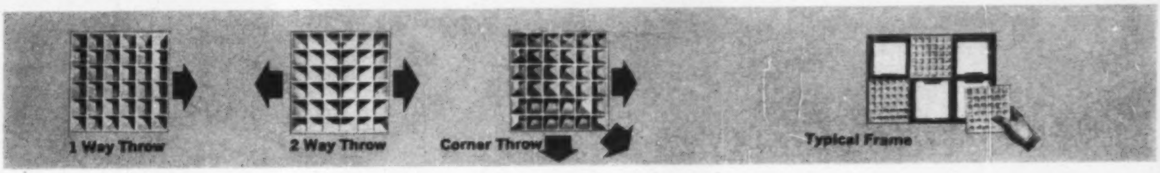
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



LEADERS GO TO CARNES FOR THE NEWEST IN AIR DISTRIBUTION



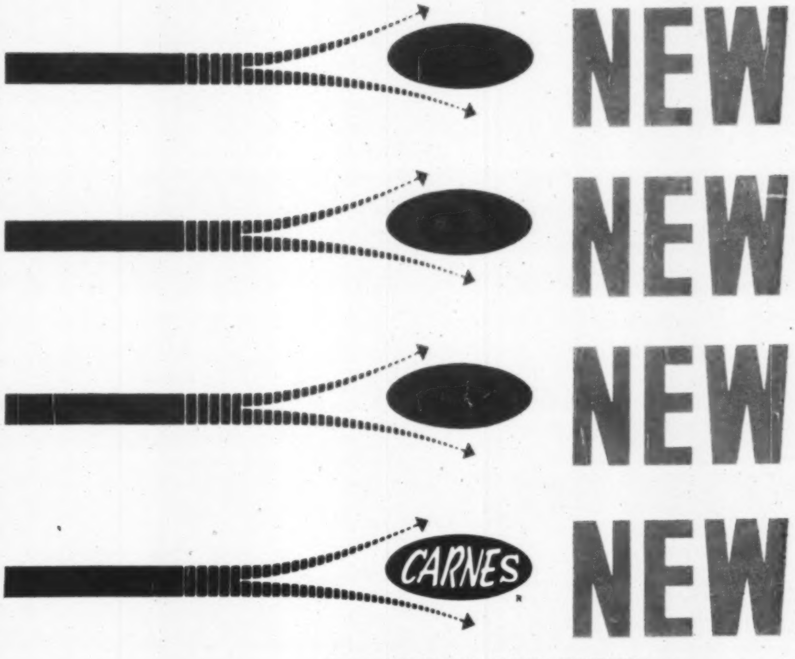
Modular Plastic Diffuser

patent applied for

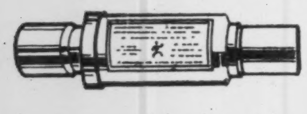
FUNCTIONAL! VERSATILE! UNOBTRUSIVE!

Carnes attractive white Model "M" Modular Diffuser enhances the aesthetic quality of any ceiling. The 6-inch square modules fit virtually flush with ceiling . . . have a minimum of see-through . . . inhibit smudging . . . easily slip in or out for changing air direction or cleaning. An infinite number of patterns and sizes are yours by combining multiples of three plastic modules: 1 way throw, 2 way throw, corner throw. Continuous strip patterns . . . cross patterns . . . alternating patterns may be developed to solve any design or air distribution problem. Module units . . . above windows . . . between fluorescent fixtures . . . around columns or walls . . . butted to light fixtures . . . carry out architectural lines and blend with all ceiling materials. They are equally effective when used as an air return. Modules are made from General Electric's new LEXAN, a self-extinguishing, high-impact material that withstands temperatures to 225° without distortion. Frames are available in a wide variety of sizes and types . . . easily joined to make any continuous length or width desired. For complete details, write for Modular Diffuser Catalog No. 460.

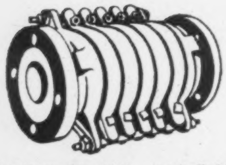
Carnes also manufactures Round, Rectangular, Square, Convertible and Baseboard Diffusers • Registers • Grilles • High- and Low-Velocity ATC Units • Roof and Wall Ventilators



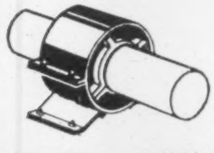
CARNES CORPORATION, VERONA, WISCONSIN



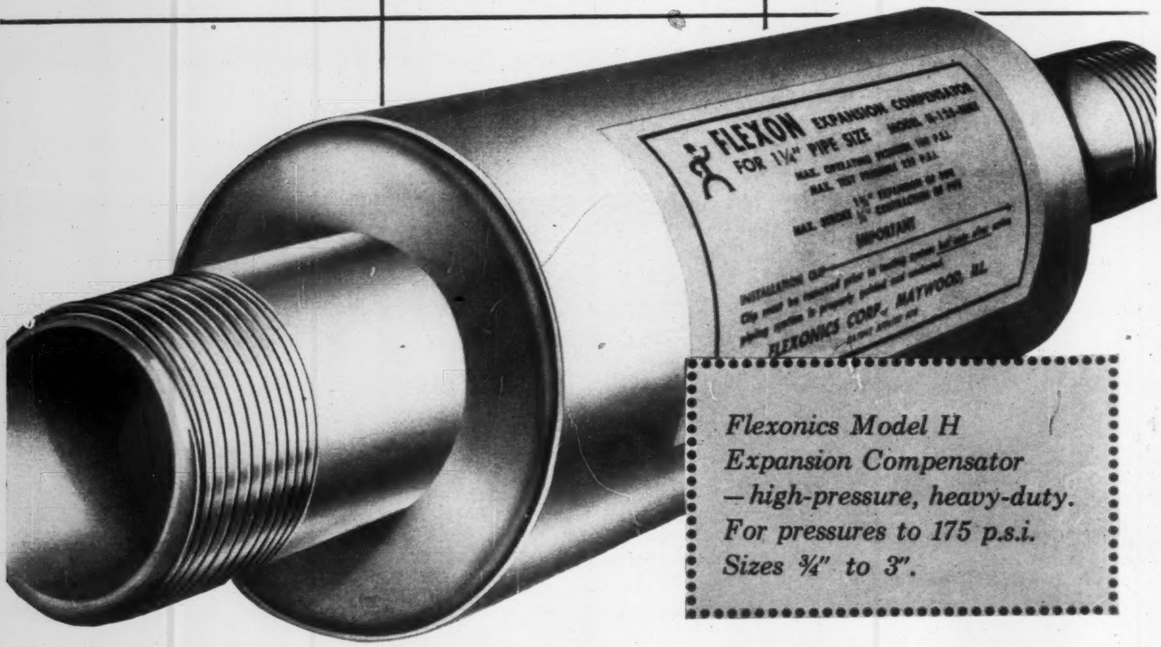
Flexonics Model L Expansion Compensator — to handle pipe and tubing motion up to ½" in low-pressure heating systems.



Flexonics Expansion Joints — controlled-flexing, free-flexing, and many special types, in an unlimited range of sizes.



Flexonics Pipe Guides — a completely new and better way to keep pipe in alignment. Positive, rugged, inexpensive.



Flexonics Model H Expansion Compensator — high-pressure, heavy-duty. For pressures to 175 p.s.i. Sizes ¾" to 3".

INCH FOR INCH, THE LOWEST-COST WAY TO TAKE UP PIPE EXPANSION

Any way you look at it, the Flexonics Model H Expansion Compensator *costs less* — costs less per inch of stroke than any other way to handle pipe motion — costs less after it's installed because it never needs maintenance.

Yet the Model H is built for hard service. Its 2-ply stainless steel Flexonics bellows is designed to outlast the building. Steel-encased and heliarc welded for full protection from external damage. Positive internal guide and anti-torque device. Completely packless. No servicing necessary after installation.

These are the reasons why engineers and piping contractors are specifying the Flexonics Model H for thousands of industrial piping jobs that use pipe up to 3" and require up to 2" total movement at each Expansion Compensator. Working pressures to 175 p.s.i. for ¾" and 1" sizes; to 125 p.s.i. for larger sizes up to 3".

Make the Flexonics Model H Expansion Compensator a cost-cutting part of your next piping job.

Today—mail the coupon for informative and helpful Engineering Guide No. 222-B.

expansion compensators

EC-130

Flexonics
corporation

In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ont.

EXPANSION JOINTS · METAL HOSE · SYNTHETIC HOSE · BELLOWS · AERO/SPACE COMPONENTS

SUBSIDIARY OF CALUMET & HECLA, INC.

ATTACH TO YOUR LETTERHEAD—MAIL TODAY!

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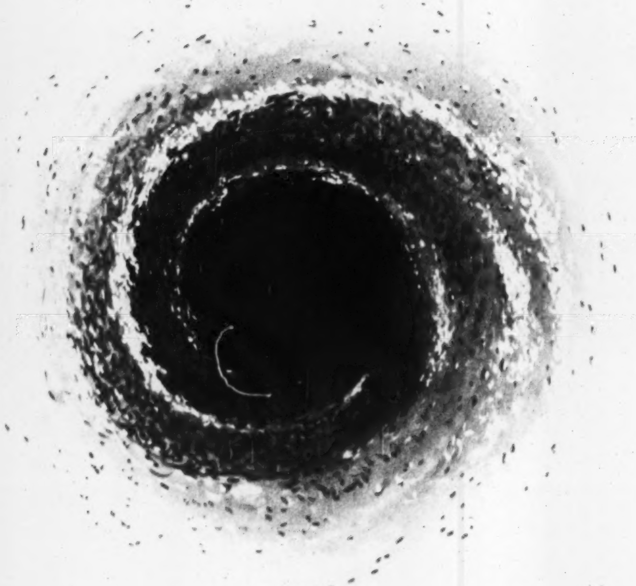
1391 S. Third Avenue
Maywood, Illinois

Please send me my personal copy of Flexonics Engineering Guide No. 222-B including full information on using Flexonics Expansion Compensators to absorb pipe movement.



Creating better products
for indoor thermal comfort . . .
through intelligent engineering
advanced styling and
continuing service

Nesbitt

HEATING, VENTILATING AND AIR CONDITIONING

1 **SYNCRETIZER UNIT VENTILATOR** The standard for classroom heating, ventilating, and natural cooling. Five models in 32" and 28" heights; 500 to 1500 CFM Std; steam or hot water—*Publication 10-1.*

2 **SYNCRETIZER AND WIND-O-LINE RADIATION** Integrated with the Syncretizer, Wind-o-line protects against window downdrafts and loss of body heat to cold surfaces, achieving a symmetrical thermal environment. 450 to 800 Btu/lin. ft.—*Publication 10A1.*

3 **THE NESBITT PACKAGE** Syncretizer and Wind-o-line Radiation integrated with Nesbitt Storage Cabinets; 32" and 28" heights. For classroom beauty, utility and comfort—*Publication 10-1.*

4 **YEAR-ROUND SYNCRETIZER** Complete year-round air conditioning for classrooms, libraries, etc. Five models: 500 to 1500 CFM; heating, 40 to 118 MBH; cooling, 15 to 65 MBH—*Publication 11A1.*

5 **THE MAINLINER** A quiet heating and ventilating unit for classrooms in certain milder localities. Four models: 500 to 1500 CFM; for use with forced hot water piping concealed by wall-hung enclosures in the economical Mainline System—*Publication 12-1.*

6 **THE AUDICON** A year-round air conditioning unit for quiet operation in auditoriums and other high occupancy spaces. Seven models; 1250 to 15,000 CFM; steam or hot water heating, 40 to 1500 MBH; cooling (may be added later) 3 to 60 tons—*Publication 22-1.*

7 **THE THERMOVENT** A large-capacity sound-insulated heating and ventilating unit for auditoriums, cafeterias, gyms. Wide choice of models and mounting; 1250 to 15,000 CFM—*Publication 20A1.*

8 **SILL-LINE RADIATION** High capacity perimeter heating in attractive wall-hung enclosures for offices, schools, hospitals, churches where comfort and beauty are important. Standard lengths, 2.9 to 12.1 sq. ft. EDR; every needed accessory—*Publication 360.*

9 **SILL-LINE WITH STORAGE CABINETS** The advantages of perimeter heating plus the utility of attractive storage units (32" and 28" heights); 450 to 3060 Btu/linear foot—*Publication 31-2.*

10 **PROPELLER FAN HEATER** Eight basic sizes, 24 models; universal heating elements for steam or hot water; capacities from 15,200 to 335,000 Btu/hr.; sound code rated—*Publication 401.*

11 **GIANT UNIT HEATER** For large capacity heating and/or ventilating, free or static delivery; 12 basic sizes each with choice of 10 heating elements; steam or hot water; 83,000 to 1,735,000 Btu/hr.; one to three fans; four mountings—*Publication 404.*

12 **LITTLE GIANT HEATER** Draw-through propeller fan units with universal heating elements for steam or hot water; 14 sizes, 34 models; 16,000 to 610,000 Btu/hr.; wide choice of vertical or horizontal discharge outlets; sound code rated—*Publication 402.*

13 **CABINET UNIT HEATER** Series A: versatile high-capacity units; seven basic sizes (265 to 1860 CFM) for steam (71 to 545 sq. ft. EDR) or hot water (9.1 to 120 MBH); recess, semi- or non-recess models; floor, wall, ceiling, inverted mounting—*Publication 403.*

14 **GAS-FIRED UNIT HEATER** Ten basic sizes, A.G.A. approved for use with all gases; 25,000 to 250,000 Btu/hr. input; 400 to 3600 CFM; attractive, compact, lightweight—*Publication 400.* Gas-fired Centrifugal Blower Fan Heaters, *Publication 400-2,* and Gas-fired Duct Furnaces, *Publication 400-3,* also available.

15 **ROOMMATE AIR CONDITIONER** Year-round cabinet conditioner for offices, apartments, etc. Seven sizes: 200 to 1400 CFM; 1 to 5 tons cooling; 25 to 100 MBH heating. Recess, semi-recess and non-recess units for floor, wall or ceiling—*Publication 600-1.*

16 **SERIES M AIR CONDITIONER** For year-round heating, ventilating and air conditioning in stores, offices, showrooms, etc. Nine models: 1000 to 15,700 CFM; 2 to 130 tons cooling; 36 to 1390 MBH heating, steam or hot water—*Publication 601-1.*

17 **SERIES G HEATING & VENTILATING** A general purpose unit for auditoriums, gymnasiums, stores, showrooms, etc. Twelve basic sizes: 1000 to 15,700 CFM; 36 to 1390 MBH heating capacity; 18 steam or hot water elements; four mountings—*Publication 500-1.*

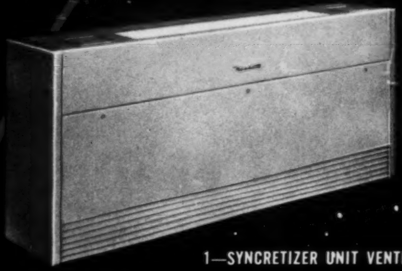
18 **BLOWER FAN EXHAUSTER** Quiet-operating air handling units with sound absorbing silencer; 12 basic sizes; one, two or three fans; air deliveries, 1000 to 22,700 CFM—*Publication 21-1.*

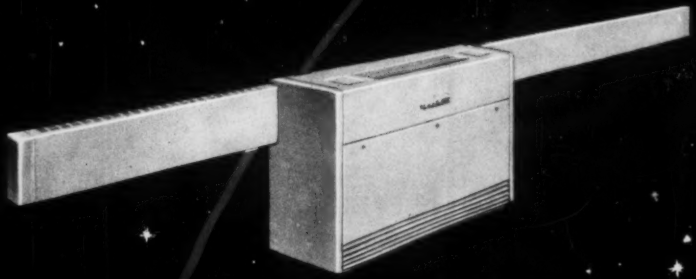
19 **BASEBOARD RADIATION** Practical design combines strength, beauty and ample capacity (4.05 sq. ft. EDR) for perimeter heating. Copper-tube aluminum-fin element; ratings code approved. Packaged lengths and accessories; easy to install—*Publication 200-1.*

20 **HEATING & COOLING SURFACE** Three famous Nesbitt lines:
Series W water surface: type WB, without drain; and WD, nonfreeze drainable type, pitched within casing—*Publication 302.*
Type WC, cleanable tubes and removable headers—*Publication 303.*
Series H general purpose blast coil surface for heating, ventilating, air conditioning and drying applications—*Publication 301.*
Series T surface with trombone steam-distributing tubes; eliminates stratification and the danger of freezing under modulated valve control; ideal for preheating outdoor air—*Publication 305.*

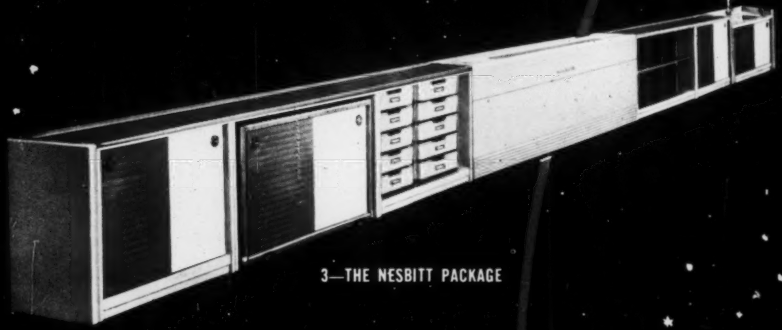
PRODUCTS FOR ELECTRIC HEATING AND VENTILATING
Syncretizer Unit Ventilator, *Publication E10-1;* Thermovent Heating and Ventilating Unit, *Publication E20-1;* Cabinet Unit Heater, *Publication E403;* Sill-line Radiation, *Publication E30-1;* Propeller Fan Unit Heater, *Publication E401.*

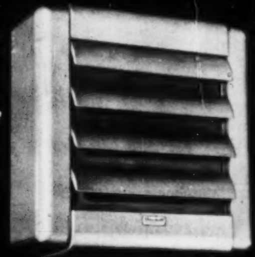
LIFT THIS FLAP

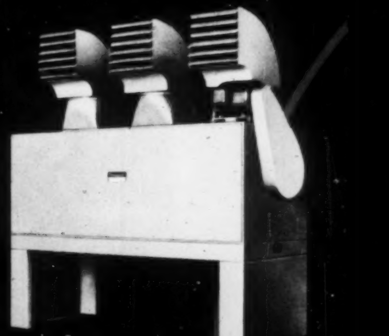

1—SYNCRETIZER UNIT VENTILATOR

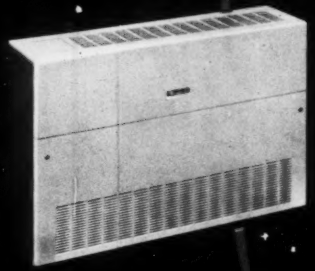

2—SYNCRETIZER AND WIND-O-LINE RADIATION

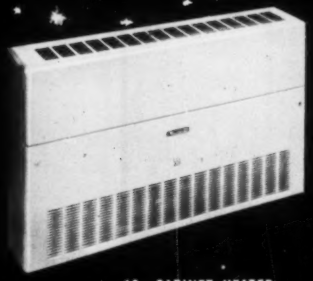
4—YEAR-ROUND SYNCRETIZER

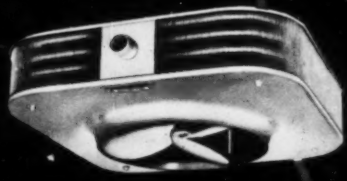

3—THE NESBITT PACKAGE

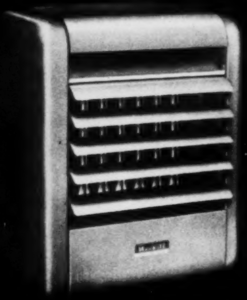

10—PROPELLER FAN UNIT HEATER


11—GIANT UNIT HEATER


15—ROOMMATE AIR CONDITIONER

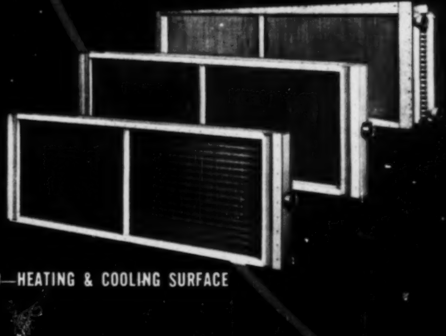

13—CABINET HEATER

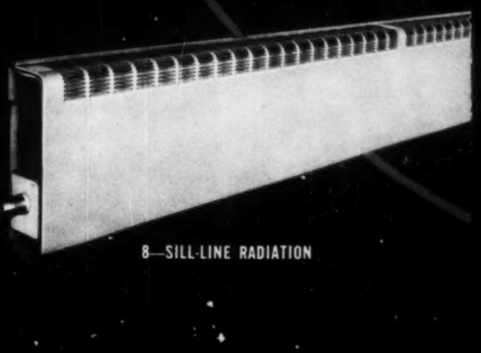

12—LITTLE GIANT UNIT HEATER

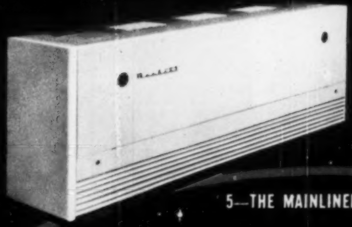

14—GAS-FIRED UNIT HEATER

THERMAL COMFORT

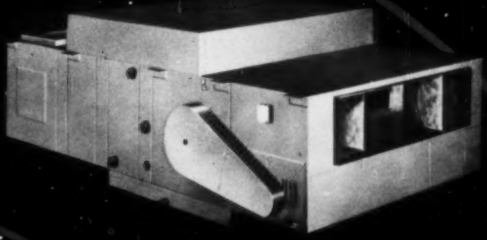
9—SILL-LINE WITH STORAGE CABINETS


20—HEATING & COOLING SURFACE


8—SILL-LINE RADIATION

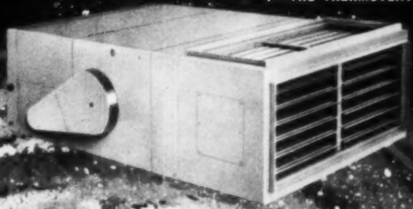


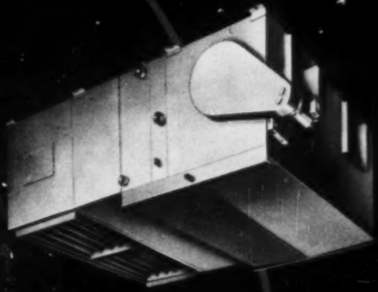
5—THE MAINLINER



6—THE AUDICON

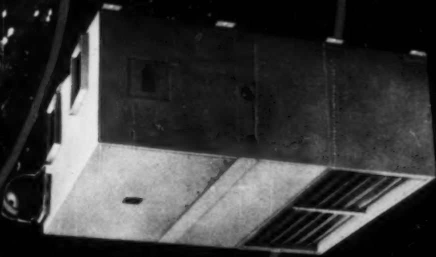
7—THE THERMOVENT



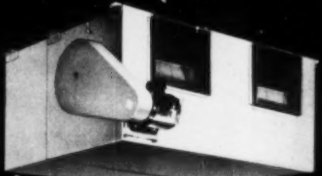


16—SERIES M AIR CONDITIONER

Nesbitt
ALL WAYS



17—SERIES G HEATING & VENTILATING



18—BLOWER FAN EXHAUSTER

19—BASEBOARD RADIATION

Where to Buy NESBITT Air Conditioning Products

SALES OFFICES, LISTED ALPHABETICALLY BY CITIES, FOR THE VARIOUS GROUPS OF NESBITT PRODUCTS

GROUP 1

SCHOOLHOUSE HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT

The Nesbitt Syncretizer, Year-Round Syncretizer, Mainliner, Wind-o-line Radiation, The Nesbitt Package, Thermovent, AudiCon, Sill-line Radiation, Sill-line with Storage Cabinets, and Exhausters are sold through offices of American-Standard Industrial Division (ASID) and John J. Nesbitt, Inc. (JJN):

City and State	Street Address	Telephone
Akron 13, Ohio (ASID)	2106 Braewick Circle	Temple 6-4934
Albany, New York (JJN)	602 New Loudon Rd., Latham	State 5-8516
Albuquerque, N. M. (ASID)	142 Monroe, N.E., Suite 2	Amherst 8-1471
Amarillo, Texas (ASID)	414 Fisk Building	Drake 2-8634
Atlanta 5, Georgia (ASID)	3224 Peachtree Rd., N.E., Room 216	Cedar 7-8604
Baltimore 18, Maryland (JJN)	33 East 21st Street	Belmont 5-5895
Bethlehem, Pa. (JJN)	1994 Collingswood Drive	University 5-1221
Billings, Montana (ASID)	209 M&R Bldg. 1002 Division St.	Alpine 2-0800
Birmingham 5, Ala. (ASID)	2201 Highland Ave., S., Rm. 213	Fairfax 3-8786
Boston, Massachusetts (JJN)	70 Jaconnet Street, Newton Highlands 61, Mass.	Lasell 7-7100
Bryn Mawr, Pa. (JJN)	765 W. Lancaster Avenue	Lawrence 5-8585
Buffalo 16, New York (JJN)	1441 Hertel Avenue	TF 8-2200
Charleston 23, W. Va. (ASID)	1029 Virginia Street, E.	Dickens 6-1331
Charlotte 4, N. C. (ASID)	1314 E. Fourth Street	Edison 2-3148
Chattanooga 3, Tenn. (ASID)	1020 McCallie Avenue	Amherst 6-6076
Chicago 1, Illinois (ASID)	228 N. LaSalle Street	Financial 6-2531
Cincinnati 6, Ohio (ASID)	1216 E. McMillan Street	Plaza 1-6262
Cleveland 15, Ohio (ASID)	1010 Euclid Avenue	Main 1-6846
Columbus, Ohio (JJN)	137 E. Granville Road, Worthington, Ohio	Tuxedo 5-4202
Dallas 2, Texas (ASID)	1213 Texas Bank Building	Riverside 7-1879
Dayton 19, Ohio (JJN)	2600 Far Hills Avenue	Axminster 9-6717
Denver 11, Colorado (ASID)	2475 W. 26th Avenue, Suite 206	Genesee 3-6827
Des Moines 9, Iowa (ASID)	404A Shops Building	Cherry 4-2711
Detroit 2, Michigan (ASID)	632 Fisher Building	Trinity 2-4300
Duluth 2, Minnesota (ASID)	120 N. 4th Avenue, W.	Randolph 2-6429
East Hartford, Conn. (JJN)	1010 Main Street, Room 204	Butler 9-6863
East Lansing, Mich. (ASID)	935 E. Grand River Avenue	Edgewood 7-1463
East Orange, N. J. (JJN)	589 Central Avenue	Orange 5-1191
Erie, Pennsylvania (JJN)	817 Commerce Building	GL 6-6815
Evansville 8, Indiana (ASID)	611 Court Building	Harrison 5-1525
Fort Wayne 6, Indiana (ASID)	3001 Fairfield Avenue, Room 51	Harrison 8813
Grand Rapids 6, Mich. (ASID)	822 Cherry, S.E., Suite 7	Glendale 8-1357
Green Bay, Wisconsin (ASID)	308 Main Street	Hemlock 5-3520
Greenville, S. C. (ASID)	Conway Bldg. N. Pleasantburg Dr.	Cedar 9-5361
Harrisburg, Pa. (JJN)	2300 Woodlawn Street	Cedar 8-8144
Honolulu 13, Hawaii (ASID)	645 Halekauwila Street	50-909
Houston 2, Texas (ASID)	1909 Travis Street	Capitol 7-6171
Indianapolis 4, Ind. (ASID)	333 N. Pennsylvania Street	Melrose 4-1353

City and State	Street Address	Telephone
Jacksonville 7, Fla. (ASID)	1230 Hendricks Ave., Suite 409	Exbrook 8-9737
Johnstown, Pa. (JJN)	206 Fisher Building	Johnstown 9-4108
Kansas City 8, Mo. (ASID)	1627 Main Street	Victor 2-7181
Knoxville 19, Tenn. (ASID)	1301 Hannah Avenue, N.W.	4-1668
Lancaster, Pa. (JJN)	Post Office Box 178	Express 4-9181
Little Rock, Ark. (ASID)	915 W. Second Street	Franklin 6-1068
Los Angeles 57, Cal. (ASID)	2411 W. 8th Street	Dunkirk 7-5303
Louisville 2, Ky. (ASID)	1622 Heyburn Building	Juniper 4-7109
Memphis 12, Tenn. (ASID)	169 Scott Street	Fairfax 4-3531
Miami 34, Florida (ASID)	220 Miracle Mile, Suite 230	Highland 8-2297
Milwaukee 22, Wisc. (ASID)	8531 W. Capitol Drive	Hopkins 4-6550
Minneapolis 2, Minn. (ASID)	610 Longyear Bldg. 76 S. 8th St.	Federal 9-9181
Mobile, Alabama (ASID)	2100 Grant Street, Room 2	Greenwood 1-3153
Moline, Illinois (ASID)	1409 15th Street	Moline 4-5608
Nashville 2, Tenn. (ASID)	1719 West End Ave., Suite 221	Alpine 5-5615
New Orleans 12, La. (ASID)	816 Howard Avenue, Room 305	Tulane 7105
New York 7, New York (JJN)	11 Park Place	Barclay 7-0260
Oklahoma City 2, Okla. (ASID)	222 N.W. 2nd Street	Central 5-1593
Omaha 2, Nebraska (ASID)	305 Patterson Building	Atlantic 7464
Peoria, Illinois (ASID)	3100 N. Knoxville Ave. Suite 16	8-6637
Philadelphia 36, Pa. (JJN)	8701 Torresdale Avenue	Devonshire 2-9800
Phoenix, Arizona (ASID)	132 S. Central Avenue	Alpine 2-4641
Pittsburgh 34, Pa. (JJN)	704 Castle Shannon Boulevard	Locust 3-0200
Portland 5, Ore. (ASID)	921 S. W. Washington Street	Capitol 8-0696
Richmond 19, Va. (ASID)	9 E. Cary Street	Milton 4-3021
Sacramento 14, Cal. (ASID)	1400 "S" Street, Room 203	Gilbert 2-2961
St. Louis 1, Mo. (ASID)	611 Olive Street	Garfield 1-1208
Salt Lake City 11, Utah (ASID)	458 S. Third East	Davis 2-1015
San Antonio 9, Texas (ASID)	8746 Crownhill	Taylor 6-3241
San Francisco 3, Cal. (ASID)	821 Market Street	Exbrook 7-6707
Scranton 5, Pa. (JJN)	232 Prospect Avenue	Diamond 3-7318
Seattle 9, Wash. (ASID)	1305 Republican Street	Main 4-4328
South Bend 1, Ind. (ASID)	402 Lafayette Building	Central 3-9305
Syracuse 3, N. Y. (JJN)	2900 Erie Boulevard East	Granite 2-3309
Tampa 9, Florida (ASID)	4302 Henderson Blvd., Suite 105	8-1316
Toledo 13, Ohio (ASID)	2446 Sylvania Avenue, Room 201	Greenwood 9-7536
Tulsa 3, Oklahoma (ASID)	421 Wright Building	Luther 4-3366
Washington 14, D.C. (ASID)	7720 Wisconsin Avenue	Oliver 4-5223
Wichita 7, Kansas (ASID)	211 Davidson Building	Amherst 7-9943
Wilmington, Delaware (JJN)	601 Delaware Avenue	Olympia 8-6569
Youngstown 7, Ohio (ASID)	3119 Market Street	Sterling 8-6525

In Canada these products are sold through American-Standard Products (Canada) Ltd., 1201 Dupont Street, Toronto 4, Ontario

GROUP 2

HEATING AND AIR CONDITIONING PRODUCTS

Complete sales and service for Nesbitt Baseboard Radiation, Giant, Little Giant, Propeller Fan, Cabinet Heater, Gas-Fired Unit Heater, Sill-line Radiation, Room-mate, AudiCon, Series G Heating and Ventilating Unit, Exhauster, Series M Conditioner, and Heating and Cooling Surfaces are provided by the following offices:

Albany, New York	602 New Loudon Road, Latham	State 5-8516
Atlanta 12, Georgia	225 Moore Street, S.E.	Jackson 5-7704
Bethlehem, Pennsylvania	1994 Collingswood Drive	University 5-1221
Baltimore 18, Maryland	33 East 21st Street	Belmont 5-5895
Birmingham 9, Alabama	2925 Central Avenue	Tremont 9-0461
Boston, Massachusetts	70 Jaconnet Street, Newton Highlands 61, Mass.	Lasell 7-7100
Bradenton, Florida	Perrine Plaza Building, Room 28	6-6935
Bryn Mawr, Pennsylvania	765 W. Lancaster Avenue	Lawrence 5-8585
Buffalo 16, New York	1441 Hertel Avenue	TF 8-2200
Charlotte, North Carolina	5429 Milford Road	Jackson 3-2551
Chicago 6, Illinois	222 W. Adams Street, Room 391	Dearborn 2-4065
Cincinnati 2, Ohio	622-626 Broadway	Main 1-6955
Cleveland 13, Ohio	1276 W. 3rd Street	Cherry 1-1581
Columbus, Ohio	137 East Granville Road, Worthington, Ohio	Tuxedo 5-4202
Dallas 6, Texas	5526 Dyer Street	EM 8-5131
Davenport, Iowa	320 Western Avenue	7-6123
Dayton 19, Ohio	2600 Far Hills Avenue	Axminster 9-6717
Denver 3, Colorado	1140 Grant Street	Cherry 4-5027
Des Moines 9, Iowa	1112 Locust Street	Atlantic 8-5721
Detroit 35, Michigan	15643 W. McNichols	Broadway 2-2186
East Hartford, Connecticut	1010 Main Street, Room 204	Butler 9-6863
East Orange, New Jersey	589 Central Avenue	Orange 5-1191
Erie, Pennsylvania	817 Commerce Building	GI 6-6815
Fort Lauderdale, Florida	2275 S. W. 44th Street	Yukon 9-3669
Fort Worth, Texas	3817 West Freeway	Pershing 7-3136

Harrisburg, Pennsylvania	2300 Woodlawn Street	Cedar 8-8144
Houston 6, Texas	1307 Anita Street	JA 9-1777
Indianapolis 20, Indiana	711 E. 65th Street	Clifford 5-5416
Jacksonville, Florida	1143 Mary Street, Room 207	Exbrook 8-4091
Johnstown, Pennsylvania	206 Fisher Building	Johnstown 9-4108
Kansas City 8, Missouri	2922 Oak Street	Westport 1-5000
Knoxville 19, Tennessee	4511 Kingston Pike	8-9321
Lancaster, Pennsylvania	Post Office Box 178	Express 4-9181
Los Angeles 4, California	310 N. Normandie	Normandy 3-3995
Louisville 4, Kentucky	1191 E. Broadway	JU 3-8845
Milwaukee 9, Wisconsin	4770 N. 19th Place	Concord 4-7100
New York 7, New York	11 Park Place	Barclay 7-0260
Norfolk 8, Virginia	4807 Colley Avenue	Madison 2-9859
Omaha 4, Nebraska	2748 N. 63rd Street	553-5546
Philadelphia 36, Pennsylvania	8701 Torresdale Avenue	Devonshire 2-9800
Pittsburgh 34, Pennsylvania	704 Castle Shannon Boulevard	Locust 3-0200
Portland, Oregon	2925 N. E. Glisan	Belmont 4-5077
Richmond 19, Virginia	9 East Cary Street	Milton 4-3021
St. Louis 15, Missouri	4604 Pope Avenue	Evergreen 5-3292
St. Paul 4, Minnesota	293 N. Snelling Avenue	Midway 5-4501
San Diego, California	Post Office Box 9433	BR 4-1879
San Francisco 24, California	1485 Bayshore Boulevard	Atwater 2-0677
Scranton 5, Pennsylvania	232 Prospect Avenue	Diamond 3-7318
Seattle 99, Washington	2621 W. Boston Street	Atwater 2-4825
Syracuse 3, New York	2900 Erie Boulevard East	Granite 2-3309
Washington 7, D.C.	1053 31st Street, N.W.	Federal 3-1818
Wilmington, Delaware	601 Delaware Avenue	Olympia 8-6569

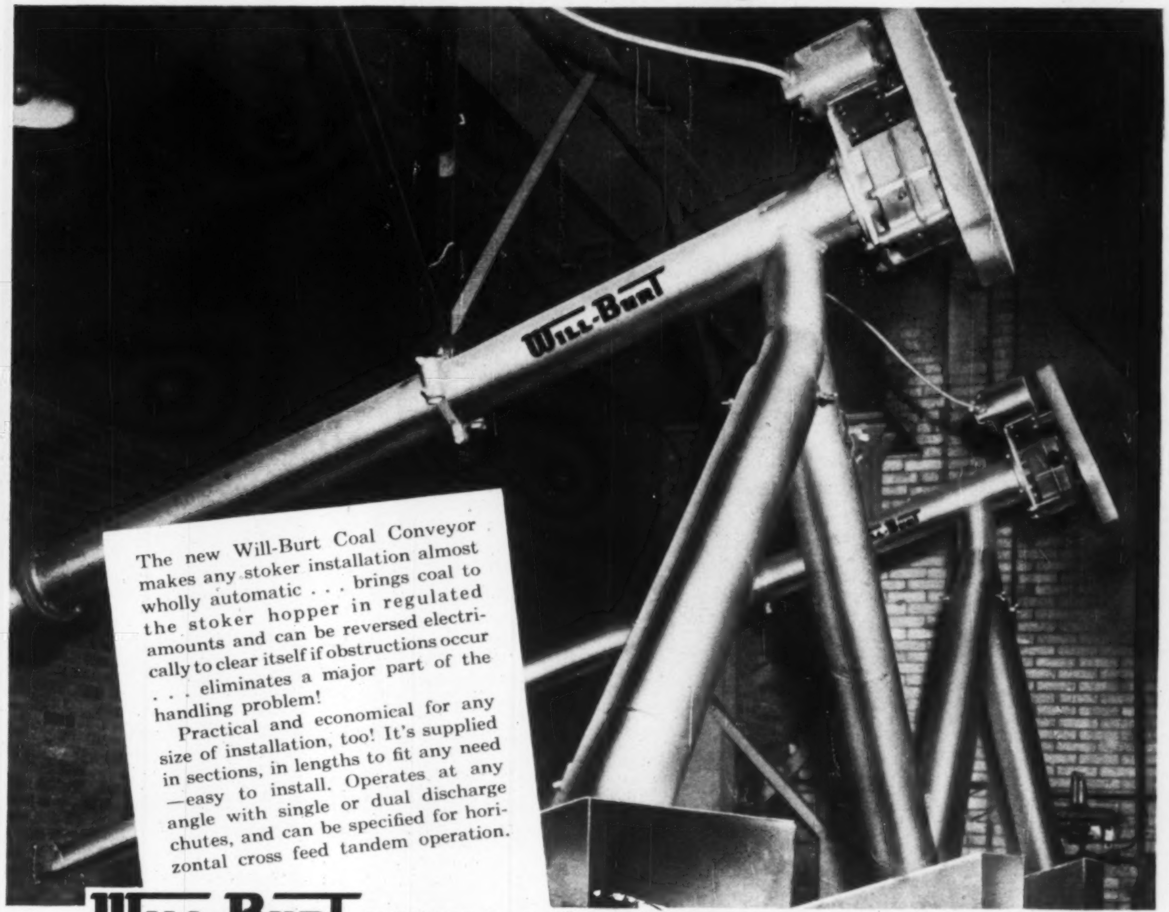
Nesbitt

HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT

JOHN J. NESBITT, INC., Main Office and Factory: Philadelphia 36, Pa. Telephone DEvonshire 2-2400

AP-161

New! an economical self-clearing COAL CONVEYOR



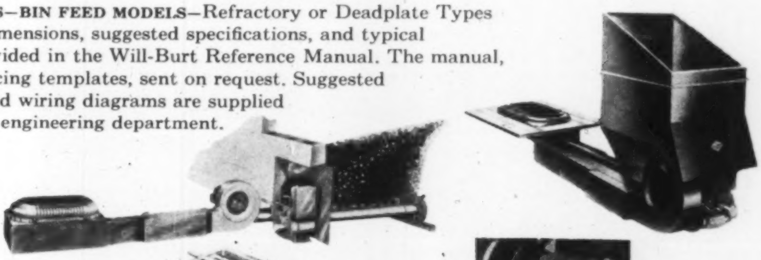
The new Will-Burt Coal Conveyor makes any stoker installation almost wholly automatic . . . brings coal to the stoker hopper in regulated amounts and can be reversed electrically to clear itself if obstructions occur . . . eliminates a major part of the handling problem!

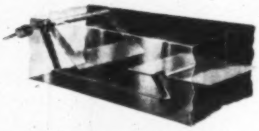
Practical and economical for any size of installation, too! It's supplied in sections, in lengths to fit any need —easy to install. Operates at any angle with single or dual discharge chutes, and can be specified for horizontal cross feed tandem operation.

WILL-BURT STOKERS for institutional, commercial, and industrial buildings.

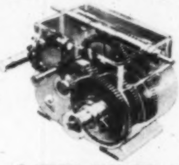
CAPACITIES 65 through 750 lbs. per hour.

HOPPER MODELS—BIN FEED MODELS—Refractory or Deadplate Types
Complete drawings, dimensions, suggested specifications, and typical installation drawings are provided in the Will-Burt Reference Manual. The manual, including stoker layout tracing templates, sent on request. Suggested installation drawings and wiring diagrams are supplied on request by our engineering department.

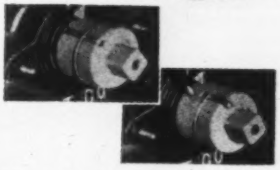




AUTOMATIC AIR CONTROL
Infinitely sensitive to fuel bed air requirements — eliminates need for manual air adjustments.

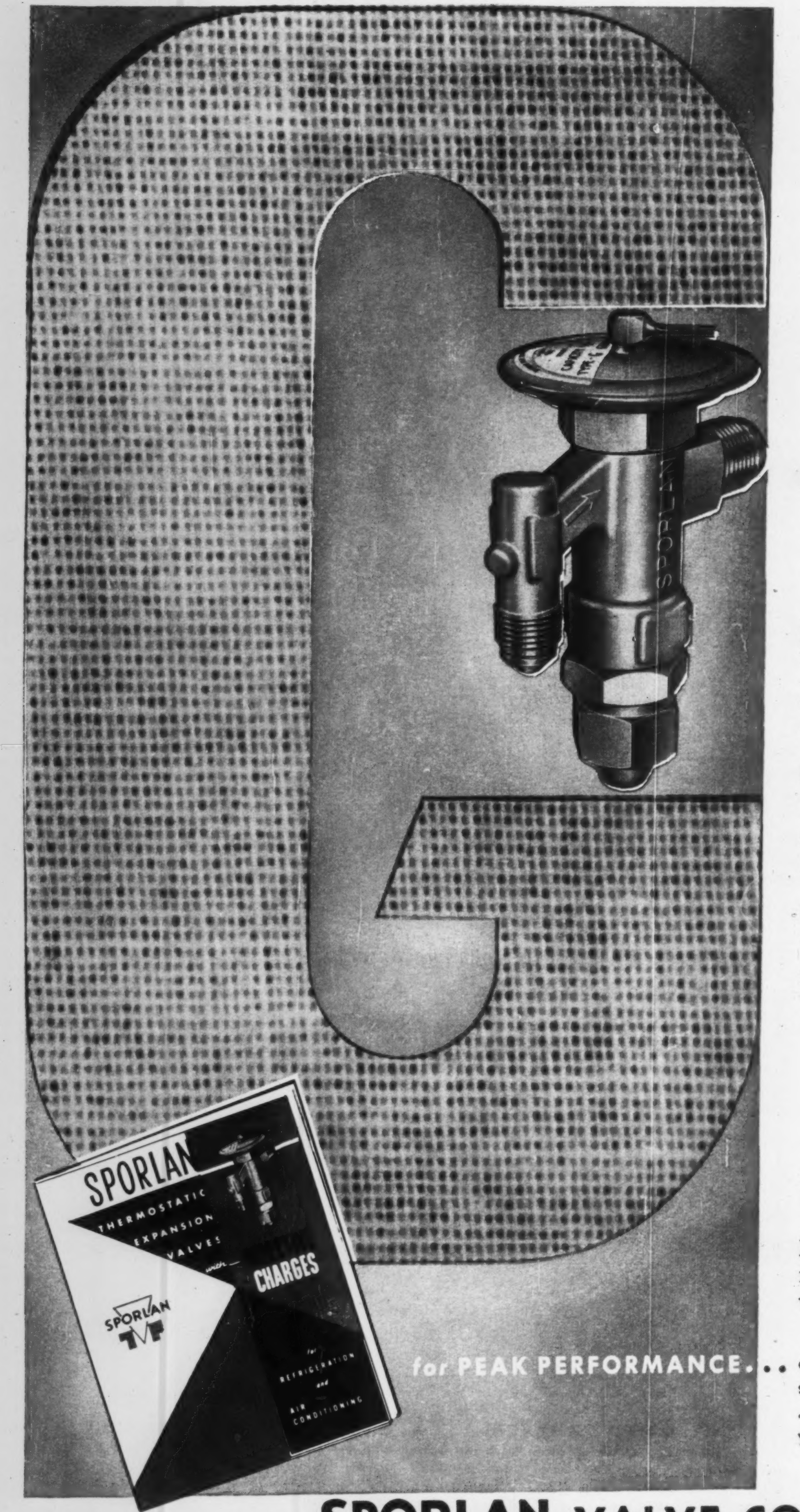


3-FEED POWER UNIT
Continuous, satisfactory service of Will-Burt Transmissions of this same design for over twenty years is proof of their dependability.



SAFETY SHEAR PIN DISCONNECT
Protects against overload — pin easily replaced, service quickly restored.

THE WILL-BURT COMPANY • ORRVILLE, OHIO, U.S.A. • *Over 30 years in the stoker business*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THERMOSTATIC EXPANSION VALVES with
CHARGES
SPORLAN
for REFRIGERATION and AIR CONDITIONING

SPORLAN

G VALVES...

the No. 1 choice for Refrigerated Cases,

utilize

SPORLAN SELECTIVE CHARGES...

famous since 1934

SPORLAN "C" CHARGE
for Suction Temperatures Above ZERO

SPORLAN "Z" CHARGE
for Suction Temperatures Below ZERO

SPORLAN "X" CHARGE
for Extremely Low Temperatures

More engineering features are incorporated in the Sporlan G valve than in any other valve... yet the basic design has always been sound... and has never been changed.

Modifications will always be made, but only to improve the valve... never to change it.

for PEAK PERFORMANCE... on all refrigeration applications, send for new bulletin 10-10 today ...then order your G valves from your friendly Sporlan Wholesaler.

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7525 SUSSEX AVENUE ST. LOUIS 17, MISSOURI

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use the EAGAN

PUMP PACKAGE PLAN!

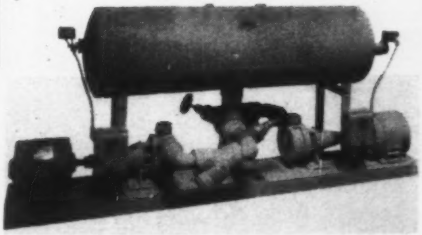
FROM ONE SOURCE,

GET THE RIGHT PUMPS

FOR EVERY JOB IN THE BOILER ROOM

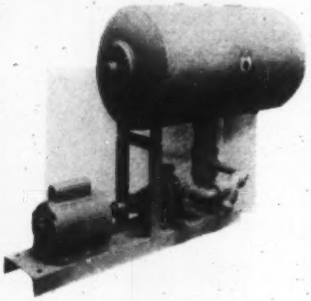
Save your TIME and your MONEY by filling ALL of your pump requirements from one single source of supply — EAGAN. By using our PUMP PACKAGE PLAN, you will eliminate headaches caused by divided responsibility and you will reduce initial plant investment through obvious savings in combining basic costs of materials, engineering and manufacturing.

Get further details on the popular, practical EAGAN PUMP PACKAGE PLAN.



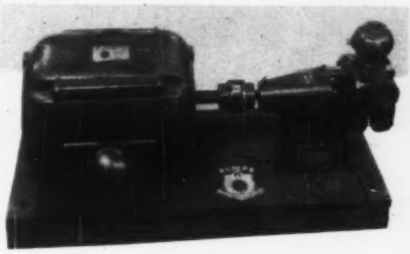
CONDENSATE PUMPS

Capacities up to 100,000 sq. ft. EDR at 200 psi. Five types of units to meet all operational requirements and specifications. They include units with overhead receivers for high temperatures as well as underground receivers for buried returns, steel, cast iron and lined receivers.



BOILER FEED PUMPS

Packaged units designed to combine the function of boiler feeding and fresh water make-up. High receiver prevents flashing when traps begin to leak. Made in a single and duplex construction for capacities to 100,000 sq. ft. at 200 psi.

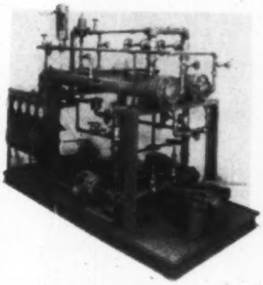


TURBINE PUMPS

Made for capacities to 200 gpm. at pressure to 200 psi. in many metals for corrosive chemicals as well as water. Incorporates preloaded bearings to permit positive centering of impeller without lateral bearing play. This permits high speeds without excessive wear.

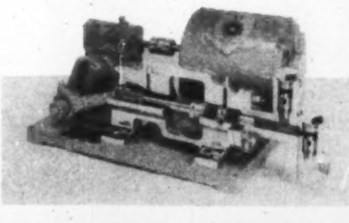
FUEL OIL PUMP AND HEATER SETS

For combustion preparation of heavy industrial fuel oil. Packaged units, delivered ready to operate including integral temperature and pressure controls. They heat to 300° F., pump up to 400 psi., have capacities to 3000° gph., are easily installed, serviced.



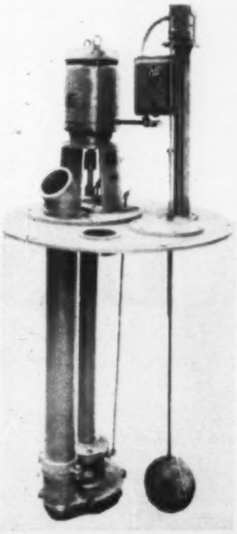
PROPORTIONING PUMPS

Controlled or metered flow for chemical feed, for processes, boiler and municipal water treatment. Capacities may be varied automatically and manually in standard capacities from 0 to 3000 gph. and pressures to 5000 psi. Packaged chemical feed units available as complete control systems.



SEWAGE AND SUMP PUMPS Suspended And Submersible

Screenless, Non-clogging Impeller Centrifugal Pumps for disposing of Raw Sewage, Industrial Waste, Solids in liquid Suspension. Capacities to 600 gpm. Discharge Head to 75 ft. Single and Duplex Arrangements.



WALTER H. EAGAN CO. INC.

2336 FAIRMOUNT AVENUE, PHILADELPHIA, 30, PA.

QUIET

These quality bearings have been developed in close cooperation with manufacturers of fan and blower equipment — to meet the highly specialized requirements of this field.

The nation's great generating plants choose these bearings because of their extraordinary dependability—and the extreme quietness of their operation makes them top choice for air conditioning systems in hospitals, schools, theatres, auditoriums.

Dodge Fan and Blower Bearings are available from stock—with stock-product economy. Consult your local Dodge Distributor—or write us for technical data.

DODGE MANUFACTURING CORPORATION
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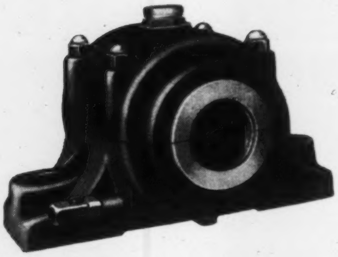
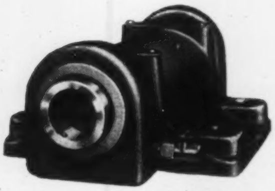
DODGE
of Mishawaka, Ind.



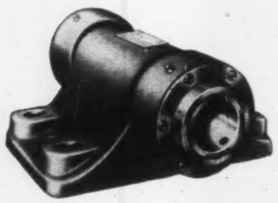
DODGE SLEEVOIL PILLOW BLOCKS

Exceptionally quiet in operation. Noted for superb quality. Plain and Water Cooled Types. Precision-built, ring-oiling, babbitted. Self-aligning. Can be drilled for thermostatic emergency warning. Shaft sizes from 1-7/16″ to 10″.



DODGE BRONZE BUSHED PILLOW BLOCKS

Designed for Arrangement No. 2 installations. Two bronze bushings of high lead content mounted in one cast iron housing. Special T-section rings for dependable lubrication. Exceptionally quiet in operation. Shaft sizes from 15/16″ to 2-3/16″.

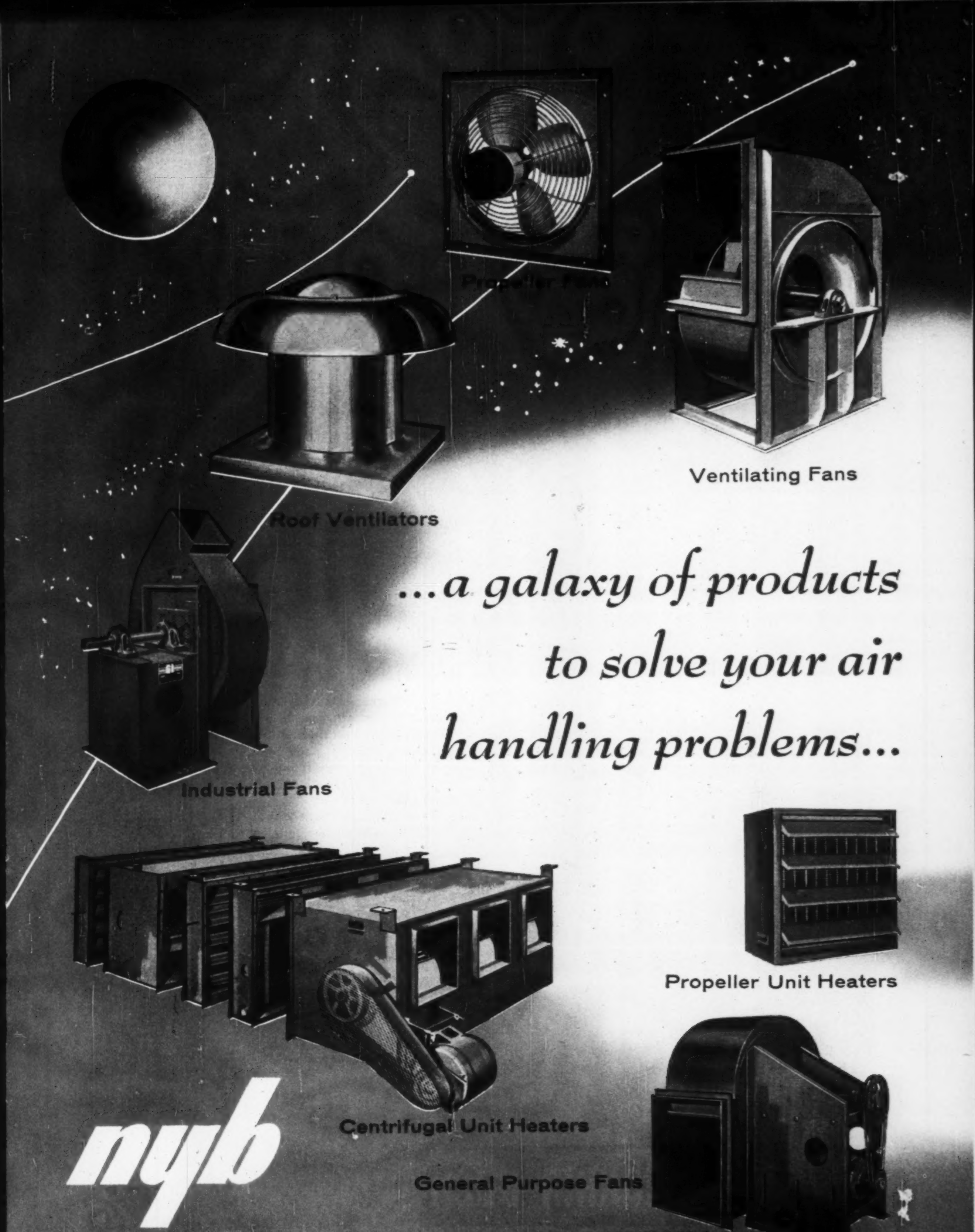


DODGE BALL BEARING PILLOW BLOCKS

Designed for Arrangement No. 2 installations. Two precision single row, deep groove ball bearings in one cast iron housing. Extended inner race carries shaft. Remarkable ease of installation and maintenance. Shaft sizes from 15/16″ to 2-3/16″.

MANUFACTURER OF AMERICA'S MOST COMPLETE LINE OF MOUNTED BEARINGS

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look under "Dodge Transmissioneer" in the white pages of your telephone directory, or in the yellow pages under "Power Transmission Equipment."


Propeller Fans
Ventilating Fans
Roof Ventilators
...a galaxy of products to solve your air handling problems...
Industrial Fans
Propeller Unit Heaters
Centrifugal Unit Heaters
General Purpose Fans
nyb

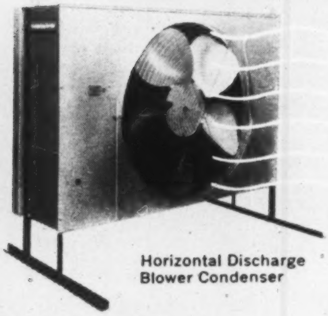
THE NEW YORK BLOWER COMPANY

Sales offices: 3149 South Shields Avenue • Chicago 16

Worth Remembering When an Air Cooled Condenser is Required...

Major features of both horizontal and vertical discharge units include a high efficiency Inner-Fin condenser coil with less internal volume and therefore smaller refrigerant charge... aluminum casing... and weather protected motor specifically designed for outdoor use. Both types of units are available with a variety of circuits to service more than one compressor.

For further information, request Form No. 7011B, or call the Dunham-Bush sales engineer near you.



Horizontal Discharge
Blower Condenser

DUNHAM-BUSH

SEE US AT BOOTHS NO. 32 AND 38
15TH INT'L. HEATING & AIR COND. EXPOSITION

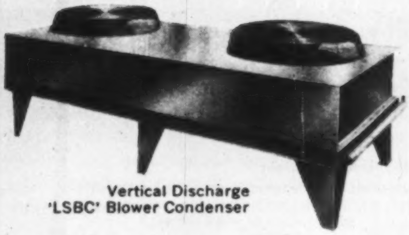
DUNHAM-BUSH now offers

15 SIZES

Enabling You to Match the Unit to the Job

No need any longer to specify a larger capacity unit than you need. The extended Dunham-Bush line of Remote Blower Condensers—in 15 horizontal or 15 vertical air discharge models—covers a full nominal capacity range from 5 through 85 tons.

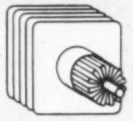
Because its new design ensures low pounds-per-square-foot-loading, the 'LSBC' Low Silhouette Blower Condenser can be installed virtually anywhere on any roof, without the costly reinforcement of roof members usually necessary to support heavier units. And the low, compact 'LSBC' is easily accommodated within minimum space, yet has the operational and construction features to meet the most rigid performance demands. Air movement is up and out, making possible a minimum noise rating.

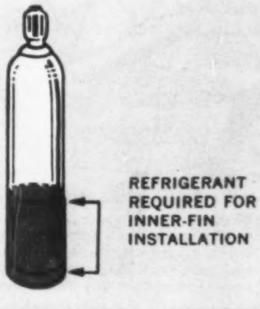


Vertical Discharge 'LSBC' Blower Condenser

SAVE

INNER-FIN REQUIRES
LESS REFRIGERANT FOR
YEAR 'ROUND OPERATION



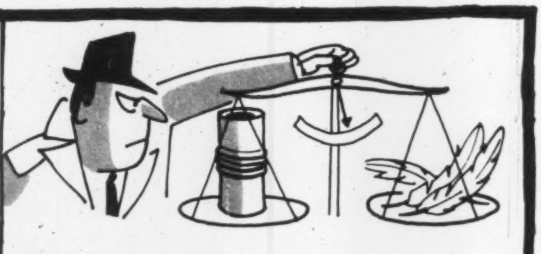


DUNHAM-BUSH, INC.

WEST HARTFORD 10, CONNECTICUT, U. S. A.
SALES OFFICES LOCATED IN PRINCIPAL CITIES

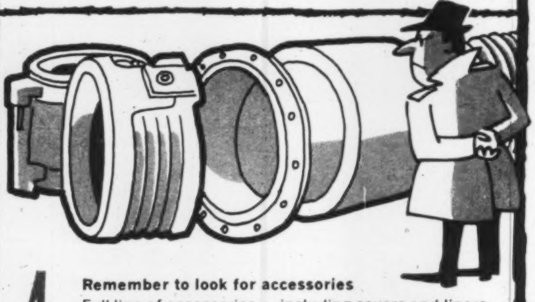
HOW TO SLEUTH OUT THE TRUTH ABOUT EXPANSION JOINTS

1 **Case the joint (design, that is)**
Badger S-R Expansion Joints have: 1. Corrugations which assume "all curve" shape under pressure — low stress, long life. 2. Tubular rings allow flexing over more of corrugation height.



2 **"Weigh" the evidence**
S-R Joints have no bulky castings . . . weigh up to 50% less . . . diameter equivalent to pipe flange. Installation is easier, lighter supports required.

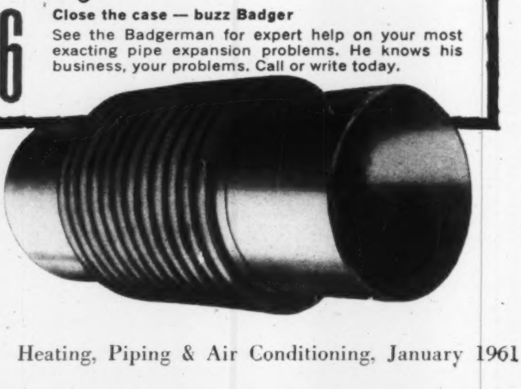
3 **Search for clues in fabrication methods**
Bellows are hydraulically formed to produce uniform corrugations with minimum thinning of material. Quality controlled longitudinal welding, no multiple circumferential welds.



4 **Remember to look for accessories**
Full line of accessories — including covers and liners. Easy to pick proper combination of model, type and accessories for any pressure, temperature, erosive or corrosive condition.

5 **Pull an M.O. on the manufacturer's background**
Badger's 50-year experience includes development of first successful self-equalizing design for higher pressures, temperatures. Badger has had more fabrication and engineering experience in more different applications than any other manufacturer.

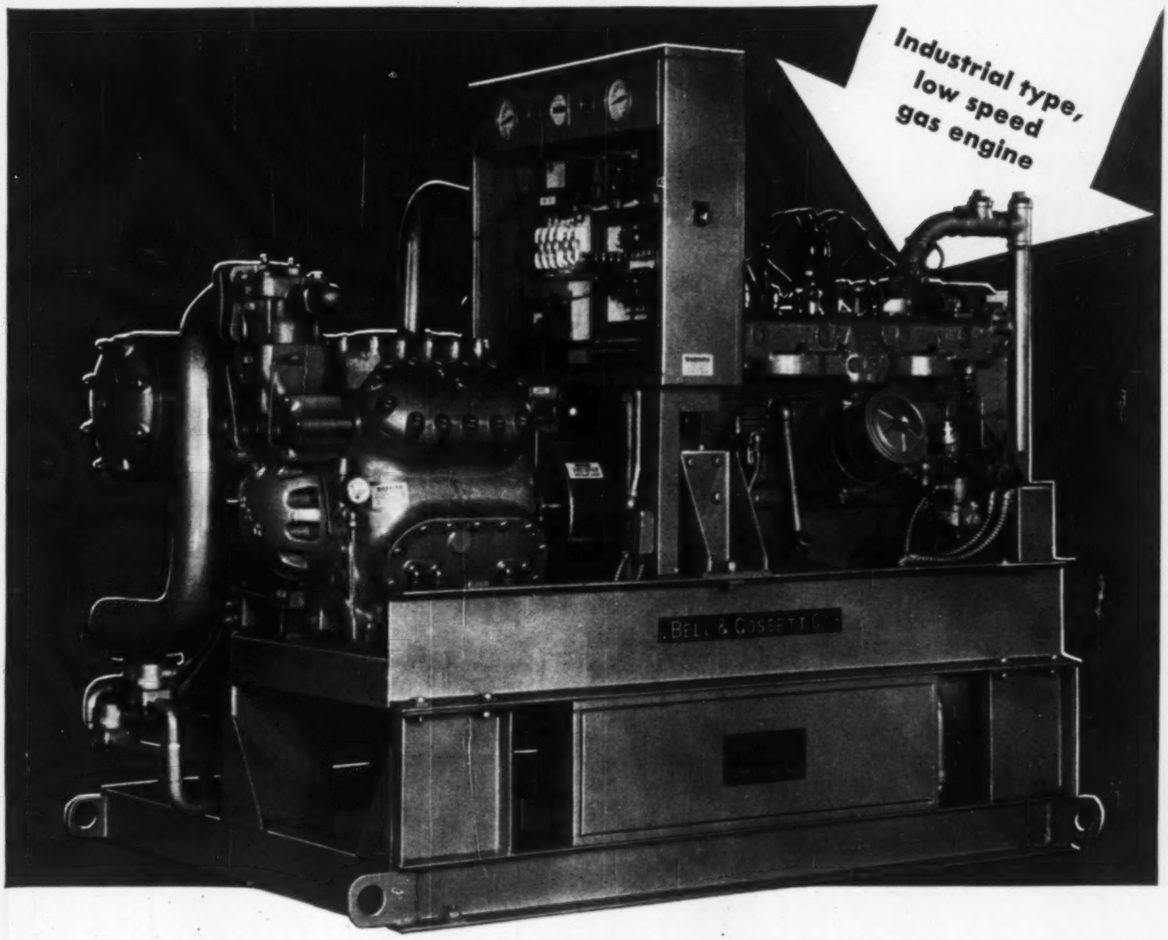
6 **Close the case — buzz Badger**
See the Badgerman for expert help on your most exacting pipe expansion problems. He knows his business, your problems. Call or write today.



BADGER S·R
Expansion Joints

BADGER MANUFACTURING COMPANY
230 Bent Street, Cambridge 41, Mass.
Representatives in Principal Cities

© 1960 BMC



NOW *GAS ENGINE POWERED...*

B&G Package Liquid Coolers, Condensing Units and Engine Compressors are now available as "package" units powered by integral gas engines. These are the only units with all major components (except the engine) *designed, built and guaranteed by one manufacturer.*

B&G gas powered units are equipped with an industrial type, low speed gas engine developed for minimum oil and fuel consumption. The engine operates at a maximum of 70% of rated horsepower, for longer life and minimum maintenance.

Additional power plant features include an engine oil auxiliary tank that permits 2000-hour operation without adding oil...automatic and adjustable engine warm-up...100% no-load start at each start-up...automatic choke...capacity control effected by automatically varying engine speed in addition to varying the B&G compressor unloading.

A particularly outstanding feature of all three units is the compressor, an achievement in advanced design and precision manufacture. All compressors have *one* bore—a few interchangeable parts service all units.

B&G "package" cooling units incorporate many special features as standard equipment which in competitive units are "extras" or are simply not available. Send for descriptive literature.

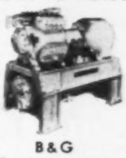
BELL & GOSSETT
COMPANY
Dept. RGM-5, Morton Grove, Illinois
Canadian Licensee: S. A. Armstrong, Ltd.,
1400 O'Connor Drive, Toronto 16, Ontario

A FULL LINE OF REFRIGERATION AND AIR CONDITIONING "PACKAGES" AND COMPONENTS

B&G Evaporator

B&G
Centrifugal Pump

B&G Condenser



B&G
Condensing Unit

Metering Steam?

Since 1906
CADILLAC Condensate Meters

have become the standard of a majority of the central heating systems in the U. S. A.

Here's Why!

Accuracy — within 1% from zero to rated capacity lasts for the life of the meter without adjustment, with proper care.

Dependability — Due to simplicity of design and good engineering.

Low Maintenance Cost — Annual inspection is average. Only two sets of parts required for seven sizes of meters.

Long Service Life — Fifty years service is not uncommon.

Unaffected by Fluctuations in Steam Pressure

Made for	CENTRAL STEAM HEATING SYSTEMS STEAM ABSORPTION AIR CONDITIONING SYSTEMS
Used by	PUBLIC UTILITY AND MUNICIPAL STEAM HEATING SYSTEMS SHOPPING CENTERS UNIVERSITIES INSTITUTIONS WITH MULTIPLE BUILDINGS OR DEPARTMENTS INDUSTRIAL USERS OF STEAM WITH CLOSED SYSTEMS

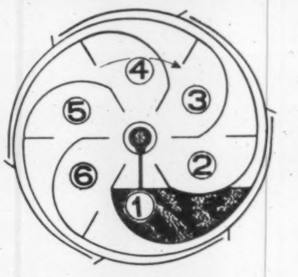
WE MAKE BOTH THE GRAVITY AND VACUUM TYPE METER

Write for catalog and name of your local distributor. Catalog gives complete information on steam metering.

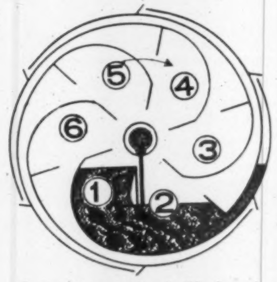
CENTRAL STATION STEAM CO.

2910 E. WOODBRIDGE • DETROIT 7, MICH.

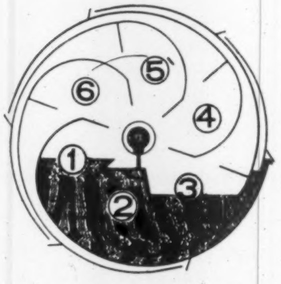
SHOWING ROTARY TYPE OPERATION OF CADILLAC CONDENSATE METERS



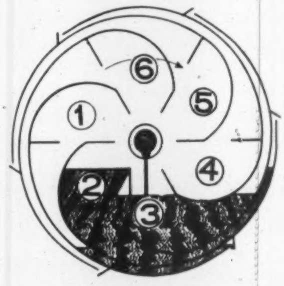
Compartment No. 1 filling. Water extending to right of center turns drum in direction of arrow



Compartment No. 1 filled and overflowing into Compartment No. 2



Compartment No. 1 ready to empty. Compartment No. 2 full and overflowing into Compartment No. 3



Compartment No. 1 nearly empty. Compartment No. 2 overflowing and Compartment No. 3 nearly full

VIRGINIA Chemicals

REFRIGERATION BULLETIN

Facts about water system maintenance

ANSWERS TO COMMON WATER TREATMENT PROBLEMS

Water obtained from natural sources is not really pure. It contains foreign matter in varying forms and amounts. This may be present as suspended solids or solids and gases in solution. The conventional dividing line between soft and hard water is 200 ppm (parts per million) of these impurities—the higher the ppm, the harder the water.

It is these substances that cause scale buildup. In cooling with water, evaporation takes place, causing increasingly higher concentration of the impurities. Eventually the solid matter drops out as a sludge or deposits on the metal surfaces, forming scale.

How to identify problem scales

Prepare a dilute solution of solid or liquid scale remover in a glass jar or bottle (1 tsp. of solid scale remover per ½ pt.—1 tbsp. per ½ pt. of liquid). Chip small pieces of scale from the unit, drop them in the solution and observe the action.

Magnesium or Calcium Carbonate Scale
Usually of light color. Will bubble vigorously in the solution.

Iron Scale
Usually a brown or reddish color. Bubbles slightly, but an oily ring may appear on solution surface.

Sulfate and Silica Scale
Can be any color. Usually is extra hard and flinty. Little or no bubbling in solution. Scale of high silica content may have a glossy surface.

How to remove them

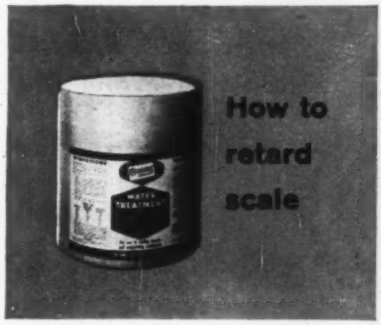
Magnesium or Calcium Carbonate Scale
Can be easily removed with either liquid or solid scale remover.

Iron Scale
Requires liquid scale remover. Use 4 gal. per 15 gal. of sump water. Stop fan to let water temperature rise to 100-110F but not over 120F. Clean at this temperature for best results. About 4 hr. needed.

Oily Scale
First add 1 box of Dash detergent per 100 gal. of system water. Run 15-20 min. Be sure foaming is not excessive. Leave the Dash in the solution and add recommended dosage of solid (5# per 10 gal. of water) or liquid (1 gal. per 15 gal. of water) scale remover.

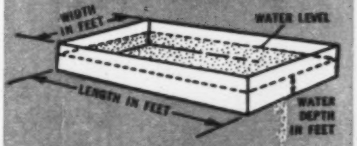
Sulfate Scale
Add 1 lb. of baking soda per gallon of sump water. Circulate for 8-12 hr. Then drain, rinse and refill system. Add liquid scale remover—4 gal. per 15 gal. of water. Circulate 2-4 hr., using test papers regularly to check cleaning strength.

Note: If any of these treatments fails, a second attempt should be made. A second failure would indicate the scale can be removed only by harsh chemical treatment or mechanical means.



"Virginia" Scale & Corrosion Inhibitor
Glassy polyphosphate crystals, provides slow, controlled solubility. No mechanical feeding devices are needed. Inhibitor holds scale-forming solids in suspension or solution. Deposits thin protective film on metal to stop oxidation. Has neutralizing effect on weak acids.

HOW TO CALCULATE AMOUNT OF WATER IN A SYSTEM

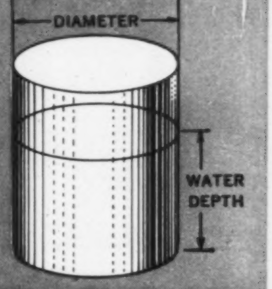


RECTANGULAR TANK OR SUMP

Measure (in feet) the length, width and water depth. Then length x width x water depth x 7.5 equals gallons of water.

EXAMPLE: If sump is 5 ft. long, 4 ft. wide, and water is .5 ft. deep, the calculation is as follows:

5 x 4 x .5 x 7.5 = 75 gal.



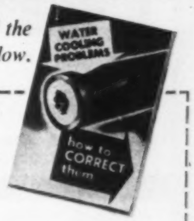
ROUND TANK

Measure diameter of tank and depth of water in feet. Then diameter squared x water depth x 6 equals gallons of water.

EXAMPLE: Tank has diameter of 3 ft. and water is 3 ft. deep

9 x 3 x 6 = 162 gal.

For more helpful information on water treatment problems and the chemicals needed for dealing with them, send us the coupon below.



Refrigeration Division, VIRGINIA SMELTING COMPANY
508 Jefferson St., West Norfolk, Va.

Send me a copy of your booklet "Water Cooling Problems—How to Correct Them"

Name________________ Title________________

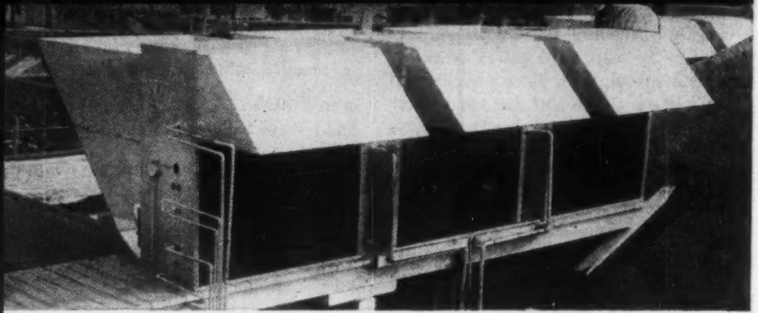
Company________________

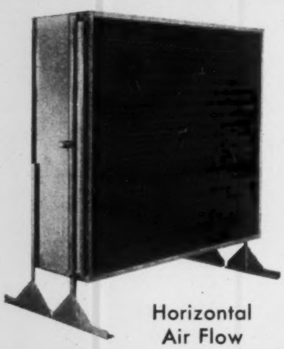
Address________________

____

BOHN

AIR COOLED CONDENSERS END WATER PROBLEMS!





Horizontal Air Flow

Vertical Air Flow

Sacramento Supermarket Saves $200 a Month in Water and Sewerage Bills Alone!

Water in Sacramento, California is hard and it's costly! Arata Brothers Supermarket solved this problem by changing from water cooled condensers to 7 Bohn Air Cooled Condensers. The result was lower maintenance and lower operating costs ... with savings of $200 monthly on sewerage and water bills alone. More importantly, the Bohn Air Cooled Condensers maintain even temperatures in the store's refrigerated equipment *at all times of the year!* Even a high temperature of 114° recorded in 1959 was easily handled by the Bohn Air Cooled Condensers! Whether it's hot or cold, Bohn controls adjust automatically to seasonal weather changes and maintain proper head pressure at all times.

For low first cost ... low operating and maintenance costs, the answer is Bohn Air Cooled Condensers ... available in horizontal models (deflectors optional) and in low-silhouette vertical models.

2 through 60-ton sizes.

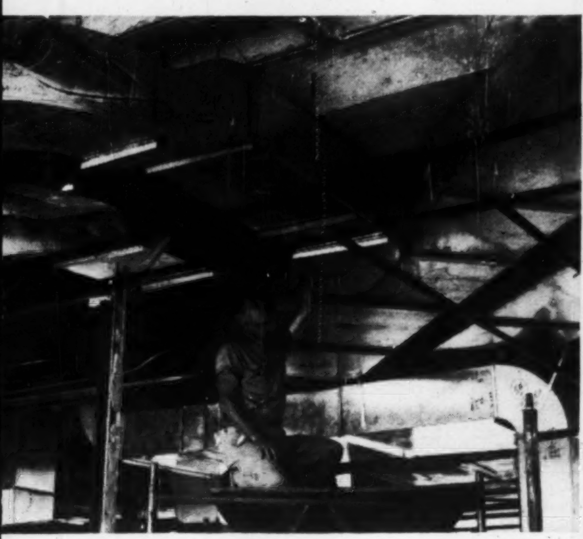
SEE OUR EXHIBIT Booth #606

BOHN

Buy the known line ... the BOHN line

ALUMINUM & BRASS CORPORATION
Danville Division • Danville, Illinois

Right, PPG insulation is easily cut to size on the job. Left, Foreman Charles W. Booth, of Acheson Sheet Metal Company, supervises installation of ductwork. PPG Neoprene-coated Duct Liner meets all requirements of NBFU Bulletins No. 90-A and 90-B for ducts, and bears the label of Underwriters' Laboratories, Inc.



The inside story on a hush-up job in Tampa

(with PPG Fiber Glass Insulation, of course!)

It will be quiet, as well as comfortable around the new State Agency Building at Tampa, Florida, because PPG Fiber Glass Insulation has been installed in the ductwork of the heating and air conditioning system.

Job foreman Charles W. Booth of Acheson Sheet Metal Company, Jacksonville, installers of the ductwork, reports that the long life-expectancy of PPG Neoprene-coated Fiber Glass is of great importance in the choice of this insulation, because of the difficulty of replacement in a duct system.

It's what's inside that counts!

Mr. Booth says that PPG Insulation has extraordinary sound-deadening qualities which eliminate fan noise, has excellent thermal-barrier characteristics, and low resistance to air flow. In addition to ease of handling and installation, it will not be affected by humidity, won't swell, rot or decay . . . very important in Tampa-types of climates!

Get best results with PPG

Available in a range of sizes, densities, and facings to meet any insulation specification. For more information, contact your nearest Fiber Glass Sales Office, or write *Pittsburgh Plate Glass Company, Fiber Glass Division, One Gateway Center, Pittsburgh 22, Penna.*

Sales Offices: Atlanta, Boston, Buffalo, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Fort Wayne, Houston, Jacksonville, Kansas City, Los Angeles, Louisville, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, Seattle and Washington.

FIBER PPG GLASS

PITTSBURGH PLATE GLASS COMPANY

CLARAGE

...dependable equipment for making air your servant

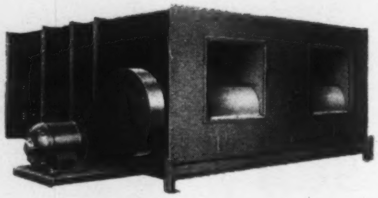
New

TWINALATOR

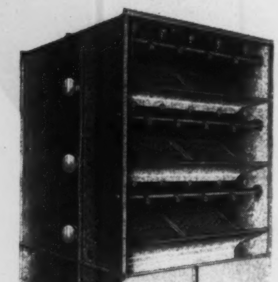
(Patented) (Trademark)

Booth 810 at the Show

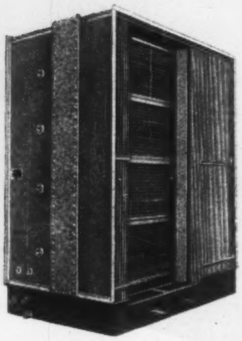
BOTH air supply and exhaust with ONE unit



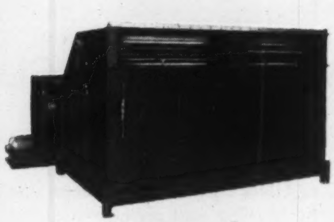
Draw-Thru Multitherms* for comfort and process air conditioning applications. Sprayed coil units also available. **Catalog 1307. Hi-Static Multitherms for pressures to 8" SP. Bulletin 1312. Capillary Conditioners for exceptional air cleaning. Catalog 1351.**



Air Washers for air cleaning and purification. Capillary Air Washers* (shown) are described in **Catalog 405** and Spray Type Air Washers are covered in **Catalog 400.**

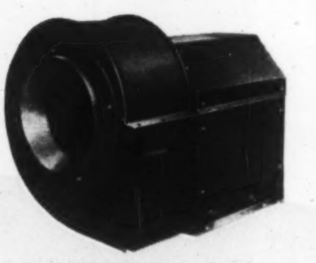


Unicoil* Units Sprayed coil equipment designed principally for cooling and dehumidifying service in central station air conditioning systems. Cutaway view above. **Catalog 411.**

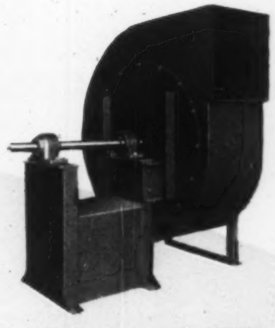


Blow-Thru Multitherms* for zone control **air conditioning. A single** unit handles different needs simultaneously in different areas by a separate set of mixing dampers for each zone. **Bulletin 1310.**

Clarage Fan Company



Ready Unit* Ventilating Sets Complete ready-to-run units for smaller air handling requirements. Direct connected (Bulletin 500) and V-belt models (Catalog 517) in 25 sizes, capacities 100 to 22,000 cfm.



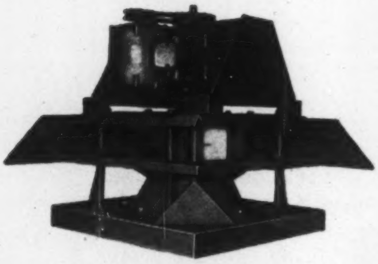
Type XL Fans range up to 130,000 cfm, 18" SP, 60" inlet diameter for industrial air and material handling assignments. Four wheel types, 16 fan sizes — smaller sizes adjustable as to discharge. **Bulletin 702.**

Ventilating and Air Conditioning Fans Type NH (shown) with backwardly inclined blade wheels, capacities 1,000 to 725,000 cfm. **Catalog 221.** Type HV Fans with forward curved multiblade wheels, capacities 150 to 450,000 cfm. **Bulletin 200.**

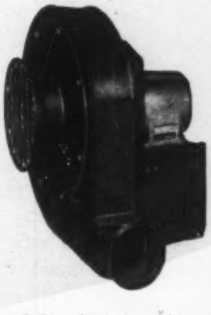
The Clarage line also includes Unitherm* Unit Heaters with multiblade fans, Catalog 1115 . . . Clarco* Unit Heaters with propeller fans, Catalog 1101 . . . Unit Stoker Fans, Bulletin 31 . . . Propeller Fans with capacities 700 to 36,000 cfm, Bulletin 520 . . . Vortex Control* for air volume regulation, Catalog 122 . . . Mechanical Draft Fans, Catalogs 905, 901, 802. By specializing — building air handling and conditioning equipment exclusively — Clarage has a concentrated "know-how" that means important dividends to you.

ALSO

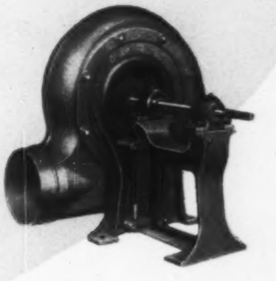
Type AF Dynafoil Fans with airfoil blade design for conduit type air conditioning, industrial processes, tunnel ventilation, mechanical draft, and similar applications. Heavy-duty. **Catalog 859.**



Centrilators*‡ Centrifugal type power roof ventilators with an exclusive Clarage Jet Siphon*‡ feature for quiet performance, high efficiency. 10 sizes, capacities to 26,400 cfm. Shown uncovered. **Bulletin 550.** Direct drive units, **Bulletin 570.** Propeller type units, **Bulletin 590.**



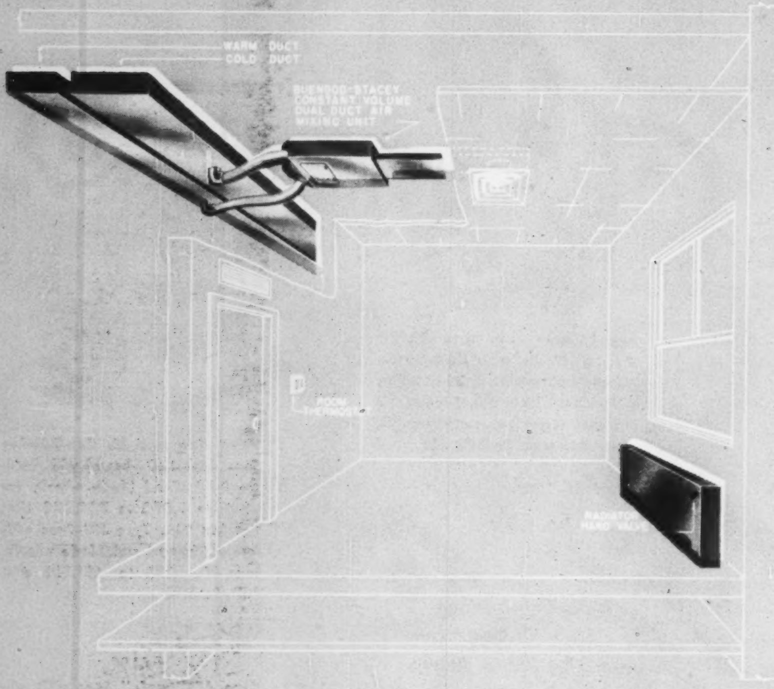
Type O Fans for industrial applications ranging to 50" SP and to 13,000 cfm. Wide selection of sizes and wheel diameters permits precise selection of the proper unit. **Catalog 855.**



Type CI Fans with cast iron housings, primarily for smaller volume exhaust applications. Capacities 200 to 3,800 cfm, pressures to 24" SP. Adjustable as to discharge. Two wheel types. **Catalog 705.**

*Trademark
‡Patent applied for

Kalamazoo, Michigan



NEW DUAL DUCT SYSTEM WITH OLD RADIATION

DUAL DUCT COMPATIBILITY

Adding air conditioning to an existing building need not be a weighty problem. The radiation system generally inherent to this type of structure can simply and economically be augmented by Buensod Dual Duct. Dual Duct is 100% compatible with existing systems. Zones supplied by the old system are given additive ventilation as required and are cooled in warm weather. Newly created zones are completely conditioned for year-'round comfort.

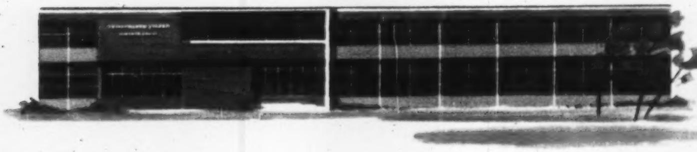
The Dual Duct system is basically a simple one. Hot and cold air is carried at high velocity in separate ducts. Buensod air mixing units in the various zones quietly deliver just the right amount of conditioned air. And exclusive Automatic Volume Control maintains constant air volume regardless of static pressure variation so the system can never be thrown out of balance. Specify Buensod for your next renovation and see how Dual Duct compatibility simplifies your job.

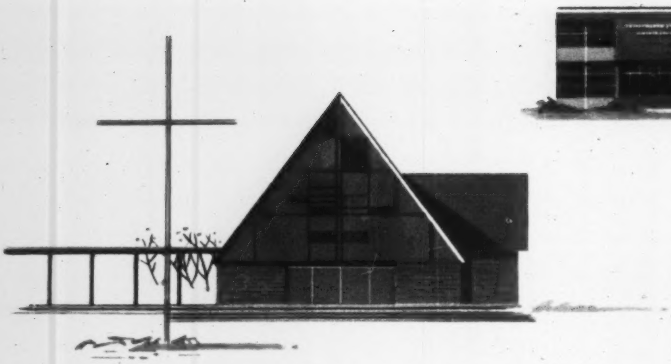
BUENSOD DUAL DUCT

BUENSOD-STACEY

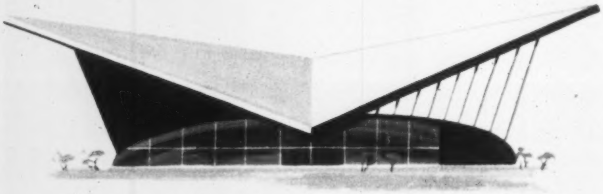
BUENSOD-STACEY CORP., 45 West 18th Street, New York 11, N. Y.
A subsidiary of Aeronca Manufacturing Corporation

American-Standard Industrial Division AIR-LIFT IN ACTION

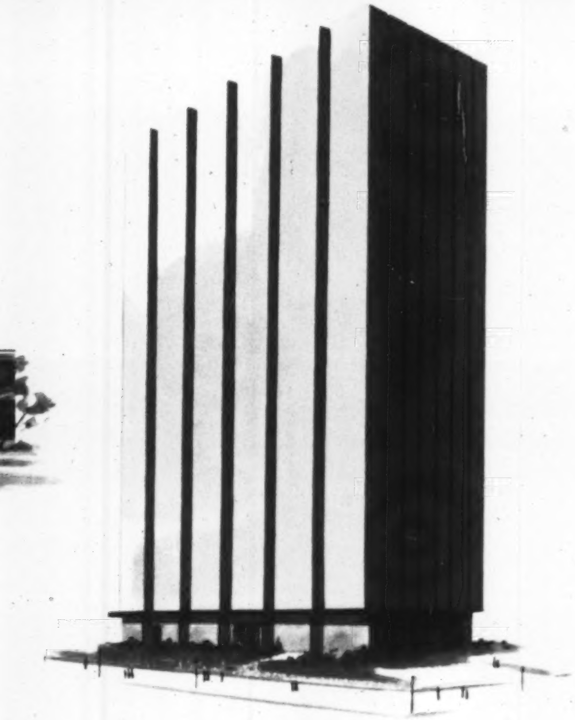




An indoor climate as modern as the bu
with systems or components from



COPYRIGHT 1959, AMERICAN RADIATOR & STANDARD SANITARY CORPORATION



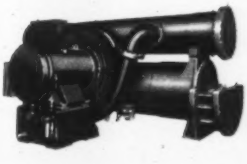
uilding itself,
om a single source

Because new ideas in building design win acceptance by working better, providing more in comfort and convenience . . . air-conditioning systems must be as modern as the buildings they serve. This is the reason for Air-Lift.

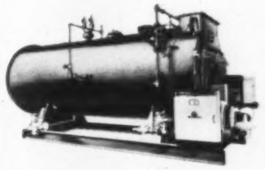
With thousands of installations in all manner of structures—towering office buildings, sprawling shopping centers, hotels, motels, auditoriums—American-Standard Industrial Division has a comprehensive knowledge of air-conditioning problems. And, with a complete line of coordinated products for air conditioning, heating, and ventilating—American-Standard Industrial Division offers *all* the equipment for efficient climate control in any building.

Air-Lift can work for you. Call on us.

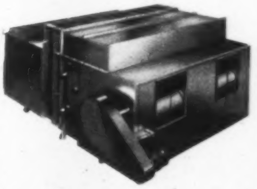
Select by the piece—
buy by the package



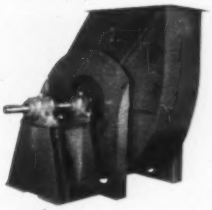
Centrifugal refrigerating machines for central-station air conditioning.



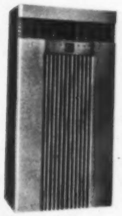
Firebox, scotch-type steel boilers and package units for heat, steam.



Central-station air conditioning units for public buildings, plants.



Centrifugal fans for high-pressure air conditioning, ventilating.



Self-contained air conditioners, air- and water-cooled types.

New from American-Standard
Industrial Division

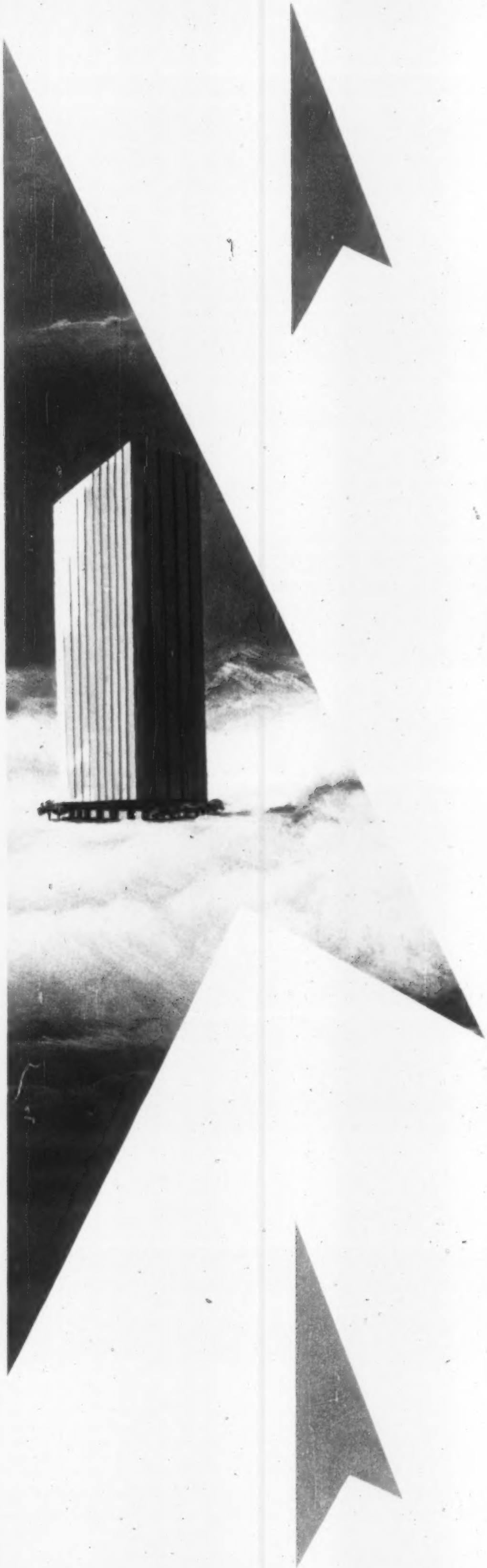
Air-Lift[†] for modern buildings

Air-Lift is a new concept of coordinated products and services from American-Standard Industrial Division. Its purpose is to help you lift the efficiency of modern buildings through better control of indoor climate. Air-Lift offers you one-source responsibility for air conditioning, heating, and ventilating equipment that is designed, engineered, and manufactured to a uniform standard of quality and performance.

To see how Air-Lift can benefit your building . . .

← LIFT THE FLAP

[†] Service-mark of American-Standard



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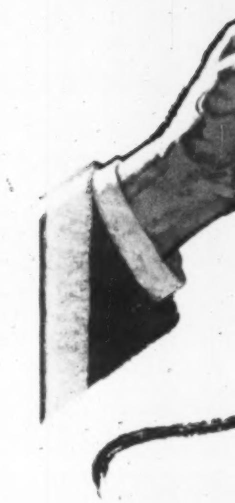


AIR

Centrifugal R
Station Air Co
Room Fancoil
Zone Air Con
fiers • Air Was
Air Condition
Pressure Fans

V

Centrifugal F
Power Roof V
Fans and Blo

One-source responsibility

The heart of American-Standard Industrial Division's Air-Lift Service

Now . . . with the combined American Blower, Ross Heat Exchanger, and Kewanee Boiler product lines . . . American-Standard* Industrial Division offers *all* the major components for complete, integrated air-conditioning systems.

You benefit by getting heating, cooling, refrigerating, and ventilating equipment designed, engineered, and manufactured to work together. And—most important—you have one-source responsibility for its quality and performance.

Offices in all principal cities are staffed by product specialists whose practical knowledge of the selection and application of air-conditioning equipment may prove most helpful to you. May we serve you? AMERICAN-STANDARD INDUSTRIAL DIVISION, DETROIT 32, MICHIGAN. IN CANADA: AMERICAN-STANDARD PRODUCTS (CANADA) LIMITED, TORONTO, ONTARIO. EXPORT DIVISION, AMERICAN-STANDARD, NEW YORK CITY.

Products designed, engineered, and manufactured to work together

R CONDITIONING

l Refrigerating Machines • Central-
r Conditioners • Package Water Chillers
coil Units • Induction Units • Multi-
Conditioners • Sprayed Coil Dehumidi-
Washers • Cooling Coils • Self-Contained
tioners • Cooling Towers • High-
ans

HEATING

Firebox, Scotch-Type, and Package Boilers Steam, Hot-Water, and Gas-Fired Unit Heaters Heating and Ventilating Units • Heating Coils Cabinet Heaters • Industrial Heaters

VENTILATION

l Fans • Propeller Fans • Axial Fans
f Ventilators • Utility Sets • Specialized
Blowers

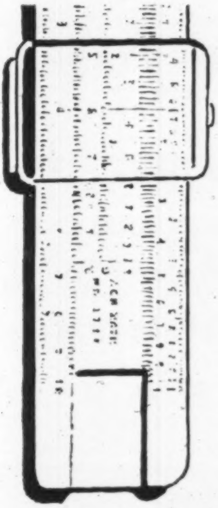
SERVICE-WATER HEATING AND FLOW CONTROL

Instantaneous Water Heaters for service-water, booster, or convertor duty • *Gýrol*® Fluid Drives to drive water-service pumps—eliminate compressed-air system or roof tank

*American-Standard and Standard® are trademarks of American Radiator & Standard Sanitary Corporation.

AMERICAN-Standard
INDUSTRIAL DIVISION

AMERICAN BLOWER PRODUCTS • ROSS PRODUCTS • KEWANEE PRODUCTS



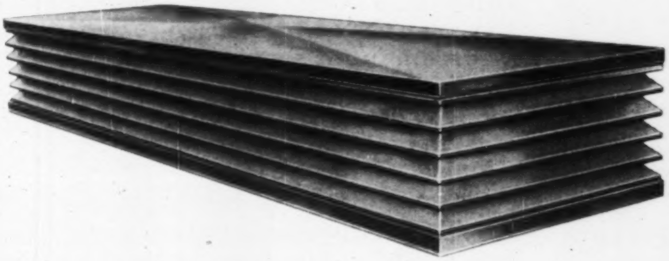
Now, bring in fresh air or remove foul air with harmonizing

PENNHOUSE

ROOF VENTILATORS

ENGINEERED BY ROOF FAN EXPERTS
WHO OFFER THE FIRST, COMPLETE
TECHNICAL BULLETIN ON HOW
TO SIZE AND SELECT
PENNHOUSE VENTILATORS

NEW FROM PENN: ENGINEERING DATA THAT ADDS TO YOUR WORKING TOOLS!



The newest way to harmonize roof fan installations is with Penn Ventilator PENNHOUSES. Laboratory-engineered and architecturally functional, Pennhouses are most often used as gravity ventilators, pressure relief ventilators, fan discharge caps, fresh air intakes, and sight shields (for aesthetic purposes) for roof mounted equipment.

In designing the Pennhouse, Penn has utilized every imaginative quality feature that only a roof fan expert can provide . . . capacity and pressure tests in an approved laboratory, easy access louvred sections, and 12 gauge extruded aluminum for its unmatched durability and sleek appearance.

Important for every engineer to have on hand is the new Pennhouse Technical Bulletin BSO-60 which now offers valuable engineering data, and for the first time, the most complete sizing chart that simplifies selecting the proper size unit for any given area. Get all the facts today on how the Pennhouse can serve your roof ventilation requirements. Write direct . . . or contact your local Penn representative.

EXTRUDED ALUMINUM
pennhouse

PENN VENTILATOR CO., Inc.
PHILADELPHIA 40, PENNA.

A leading manufacturer of Powered and Gravity Roof Exhausters and Accessory Equipment for over 30 years.

Member of AMCA

Penn Ventilator products are available throughout the Free World.
One of many direct factory representatives at your service:

WARD and BLACK, PITTSBURGH, PA.

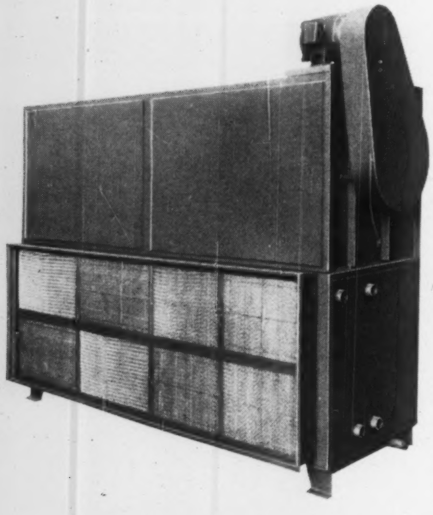
THERMAL

AIR CONDITIONING EQUIPMENT

IN USE EVERYWHERE BECAUSE IT IS...
ENGINEERED FOR MAXIMUM EFFICIENCY
BUILT FOR LONG LIFE
SPECIFIED WITH CONFIDENCE

DESIGN FEATURES

1. Thermal units are of sectional construction, which means greater overall ruggedness.
2. All sections welded, to produce maximum rigidity. Thorough reinforcement of sections adds sturdiness.
3. Specially designed slide rails permit ready removal of coils for cleaning.
4. Cabinets fabricated of best quality, black, cold-rolled furniture steel.
5. Cabinets bonderized and finished with baked-on enamel for strong protection against corrosion.
6. Drain connections side-mounted to avoid encroachment on head room.
7. Horizontal air flow through cooling coils in vertical units eliminates holdup of condensate.
8. Conditioners can be furnished with face and by-pass assemblies, or with by-pass only.
9. Units available with combination filter and mixing boxes, for either high or low velocity filters.

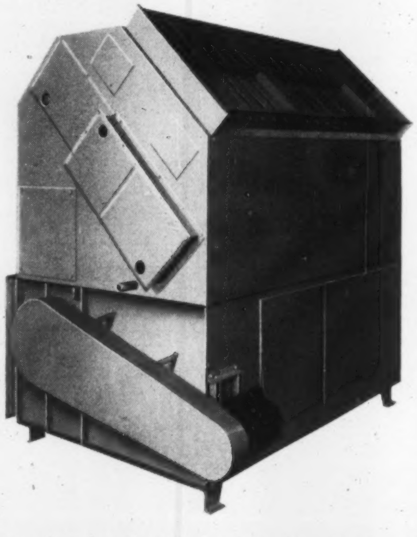


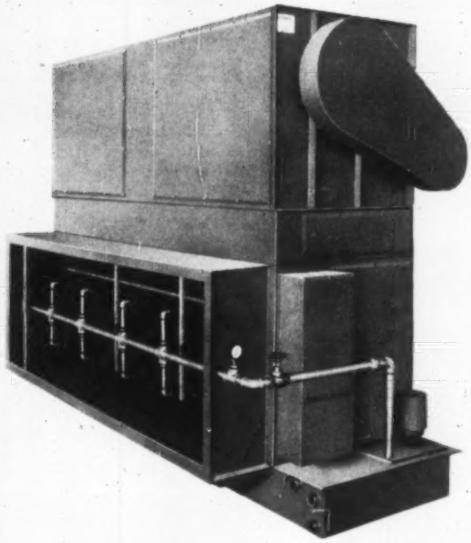
CENTRAL PLANT AIR CONDITIONERS (CP)

Single zone air conditioning units providing cooling and heating for comfort or process applications. Available in 25-casing sizes in horizontal and vertical models. Nominal air capacities range from 500-cfm to 40,000-cfm.

MULTIZONE AIR CONDITIONERS (MT)

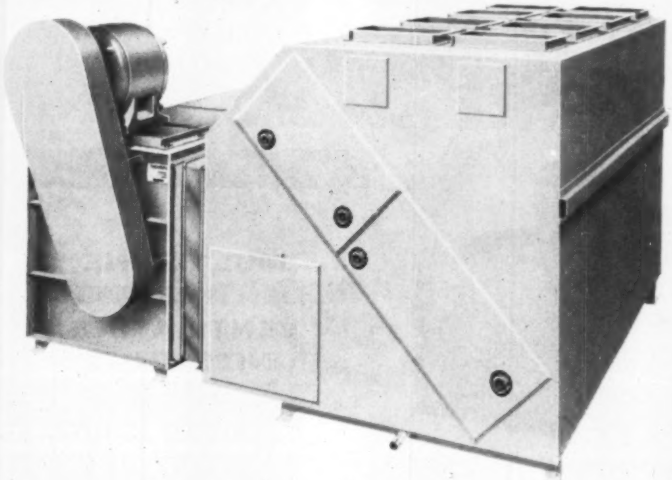
For conditioning two or more differing zones of a building from one unit. These units permit instantaneous changeover from cooling to heating (or vice versa) in any zone and permit cooling and heating simultaneously in the various zones. The horizontal model is made in 25-casing sizes. The vertical model is made in 12-casing sizes. Nominal air capacities range from 500-cfm to 40,000-cfm.





SPRAYED COIL AIR CONDITIONERS (SP)

Single zone air conditioners for close temperature and humidity control in comfort and industrial applications. Made in 25-horizontal or vertical casing sizes. Nominal air capacities range from 500-cfm to 40,000-cfm.



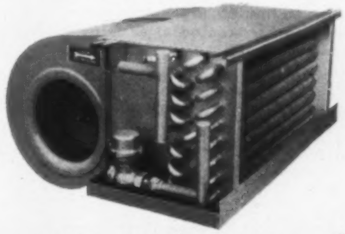
HIGH PRESSURE AIR CONDITIONERS (HP)

Made horizontal only in central plant type, sprayed coil type and in blow-through double-duct type. Manufactured for medium-pressure as well as high-pressure applications. Each type obtainable in 14-casing sizes.

TH AIR CONDITIONERS

For heating and cooling small commercial and institutional applications. Made in three types—basic unit less enclosing cabinet, with square cornered "hideway" cabinet, with rounded corner "De Luxe" cabinet for installation directly in the conditioned space. Made horizontal only in six sizes from 500-cfm through 1750-cfm.

TH-818-DL ("DE LUXE" UNIT)



TH-824 (BASIC "HIDEWAY" UNIT)

"STANDARD"
VERTICAL EC UNIT

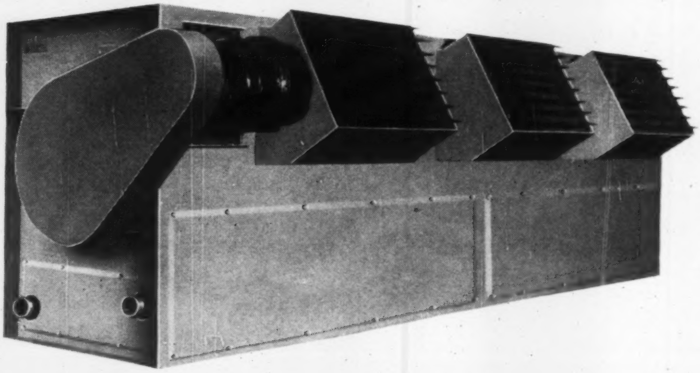
"DE LUXE"
HORIZONTAL EC UNIT

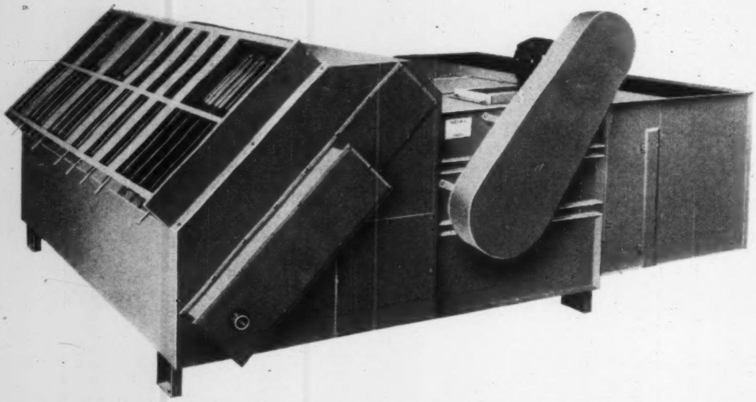
EC AIR CONDITIONERS

Built for heating and cooling small commercial buildings, schools, apartment houses, etc. Manufactured in both vertical model and horizontal model. Each model available in five sizes from (nominal) 800-cfm through 3000-cfm.

HEATING AND VENTILATING UNITS (HT)

Single zone units for heating and ventilating factories, warehouses, schools, etc. Manufactured in four models—horizontal, vertical, inverted and wall-mounted. Each model manufactured in three types, 1-fan, 2-fan and 3-fan. Horizontal and vertical units are available in 23-casing sizes. Inverted and wall-mounted units are made in 18-casing sizes. Nominal air capacities range from 800-cfm to 40,000-cfm.





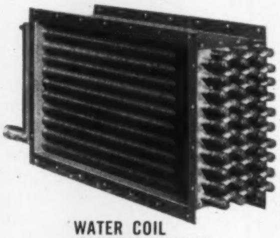
MULTIZONE HEATING AND VENTILATING UNITS (HMT)

For heating (and ventilating) two or more differing zones of a building from a single unit. Horizontal models are obtainable in 32-casing sizes, ranging nominally from 500-cfm to 40,000-cfm. Vertical models are obtainable in 17-casing sizes, ranging nominally from 2,000-cfm to 26,000-cfm.

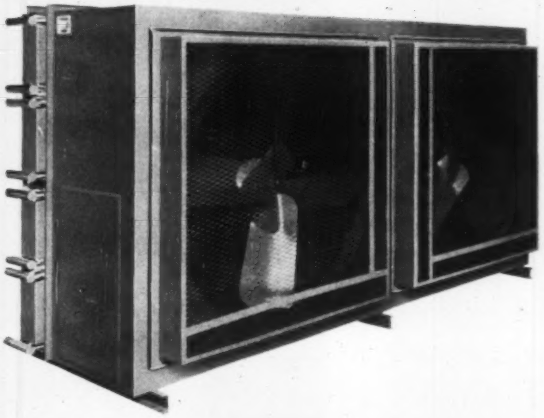
COOLING AND HEATING COILS

Coil line includes direct-expansion coils; chilled-water, both continuous tube and cleanable tube; hot-water (continuous tube and cleanable tube); standard steam and steam distributing. All coils are available in two types—copper tubes, aluminum fins, or copper tubes and copper fins solder-coated after fabrication. Direct-expansion coils and water coils are made standard from 1-row to 10-rows deep, with greater depths available on special order. Standard steam and steam distributing coils are made 1-row and 2-rows only. Coil face areas (in one coil) range from 0.81-square feet to 34.45-square feet.

WATER COIL
(STANDARD CONTINUOUS TUBE)

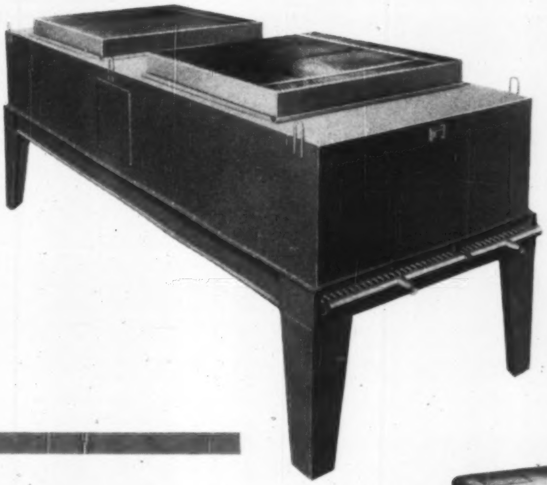


WATER COIL
(CLEANABLE TUBE)



AIR-COOLED CONDENSERS (ACC)

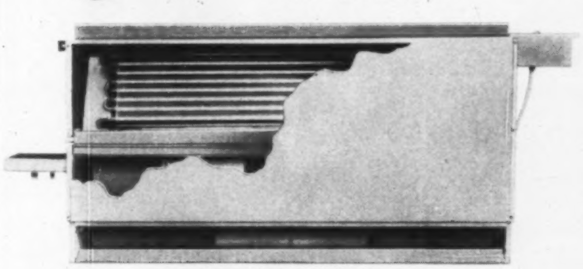
Eliminate the use of water for refrigerant condensing. Manufactured in two types, horizontal air discharge and vertical air discharge, with 15-casing sizes in each type. Nominal capacities range from 3-tons to 60-tons. Units may be installed in multiple for higher capacities. Available for R-12 and R-22 refrigerants only.



FAN AND COIL UNITS (FC)

For year around air conditioning of multi-room buildings (office buildings, hotels, hospitals, motels). Made in vertical type for free-standing application, semi-recessed, or fully-recessed. Made in horizontal type for ceiling suspension. Vertical units available in five sizes, from 200-cfm through 600-cfm. Horizontal units available in five sizes, 200-cfm, 300-cfm, 400-cfm, 600-cfm and 800-cfm.

FAN AND COIL UNIT
(FREE-STANDING MODEL)



FAN AND COIL UNIT
(FULLY-RECESSED MODEL)

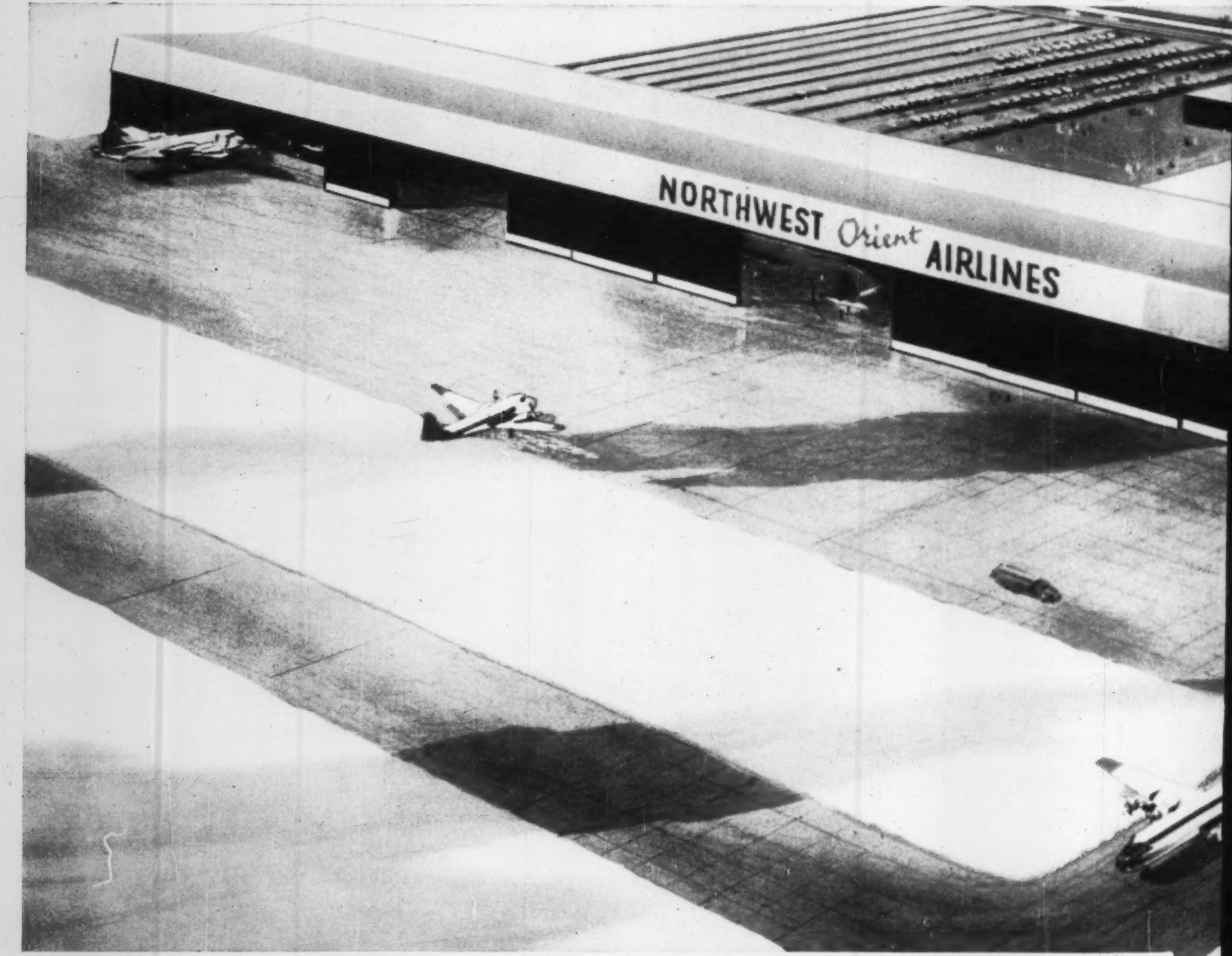
ASK FOR COMPLETE CATALOG. These pages have described in outline the standard air conditioning apparatus designed and manufactured by Thermal. For detailed specifications, ratings, selection procedures, dimensions, please request our complete engineering catalog.

AGENTS IN PRINCIPAL CITIES

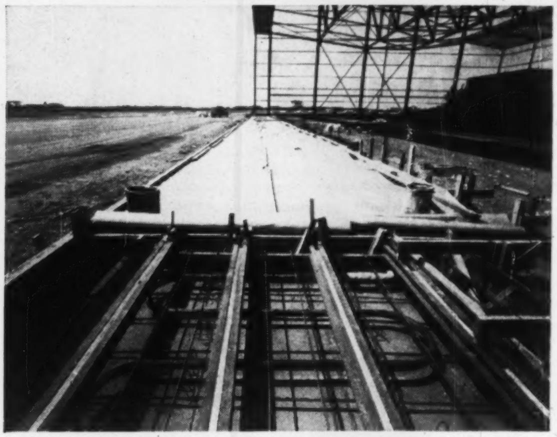
Quality Products Since 1945.

THERMAL ENGINEERING CORPORATION

2605 W. DALLAS • P. O. BOX 13254
HOUSTON 19, TEXAS



In hangars and shops, steel pipe panels carrying hot water provide comfortable warmth, at all levels, for the overhauling and maintenance crews.



Snow melting grids of steel pipe are pre-formed, placed in position and joined prior to final pouring of concrete, insuring a "clear apron" to facilitate plane movement and service.

STEEL PIPE IS FIRST CHOICE

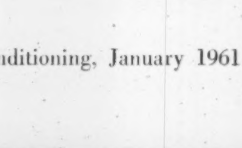
- Low cost with durability
- Strength unexcelled for safety
- Formable—bends readily
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock

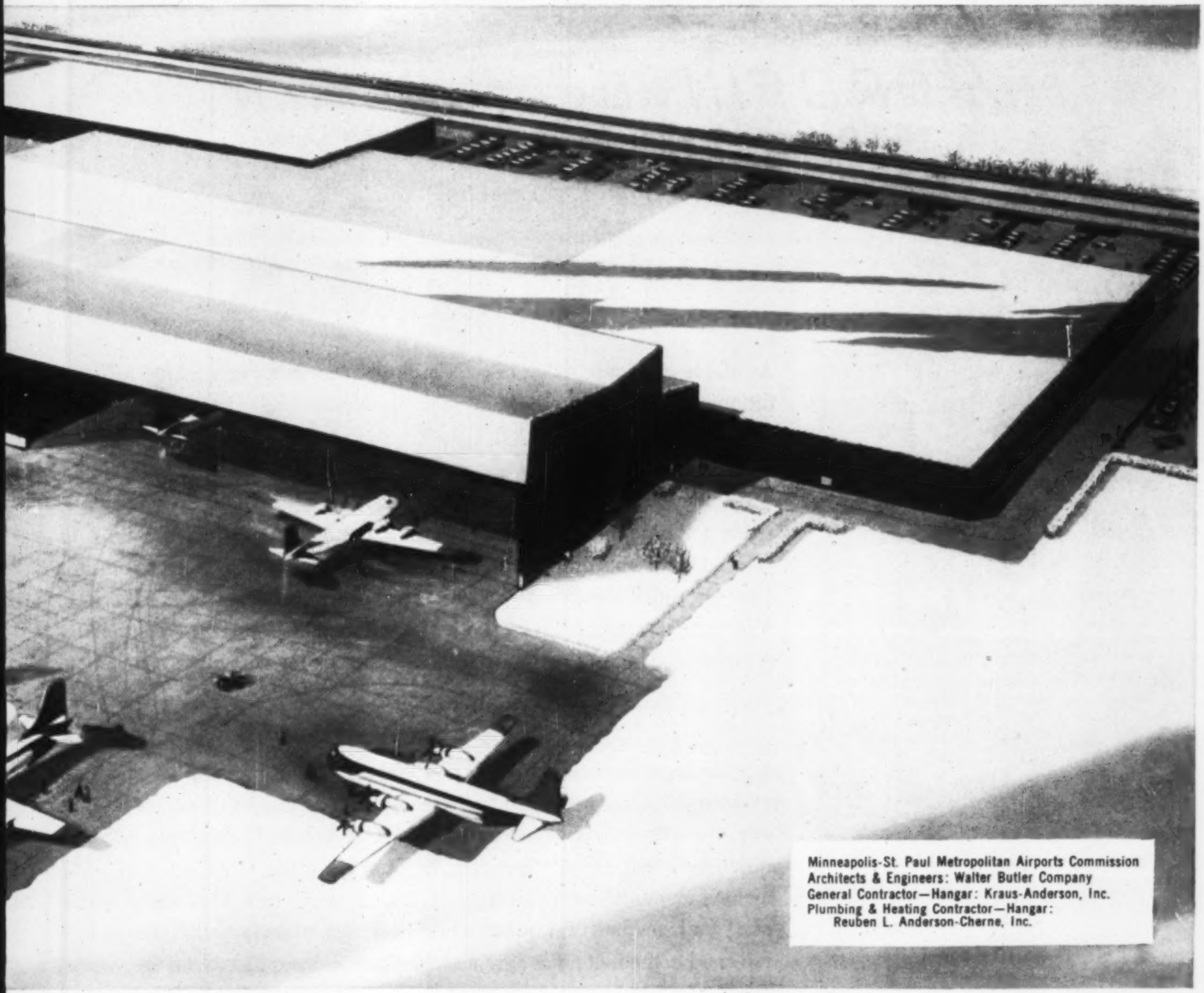
Insist on MADE IN USA Steel Pipe

C-1

For your information . . .

Two useful and factual booklets, "Steel Pipe Snow Melting and Ice Removal Systems" and "Radiant Panel Heating with Steel Pipe," are available for your planning. Write today for the copies you require.





Minneapolis-St. Paul Metropolitan Airports Commission
Architects & Engineers: Walter Butler Company
General Contractor—Hangar: Kraus-Anderson, Inc.
Plumbing & Heating Contractor—Hangar:
Reuben L. Anderson-Cherne, Inc.

In zero or snow Northwest "keeps on the go" with **steel pipe** snow melting and radiant heating

At the bee-busy Northwest Airlines home base, at the Minneapolis-St. Paul International Airport, Wold-Chamberlain Field, steel pipe radiant heating and snow-melting systems were installed to allow quick and easy aircraft movement, maintenance and overhaul in the severest winter weather. The huge hangar door tracks, garage ramp and office building entrance are kept free of ice and snow with a snow melting grid of steel pipes imbedded in concrete. In the hangars, the warmth and comfort of steel pipe radiant heating, assure efficient working conditions regardless of the freezing temperature outdoors.

Steel pipe is the natural answer for snow melting and radiant heating. Its durability, low cost and long life add up to virtually maintenance-free service. The structural strength of *steel pipe* in concrete slabs assures reliable performance even under heavy and constant surface loads.

Whatever the use—*steel pipe* has all the desirable properties of a well-engineered product. It is durable, easy to form, to cut, to join. It gives the ultimate in service and economy in conventional and radiant panel heating systems; in ice making, refrigeration and cooling systems; in fire protection and for conduit in electrical distribution systems; in vent and drainage lines, both above and below grade; in power, water, gas and air lines.

Look to *steel pipe*. It is a wise *first choice*.

STEEL PIPE

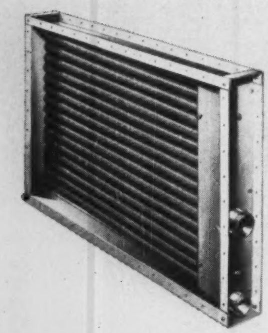
**COMMITTEE OF
STEEL PIPE PRODUCERS**
150 East Forty-Second Street, New York 17, New York

AEROFIN CORPORATION

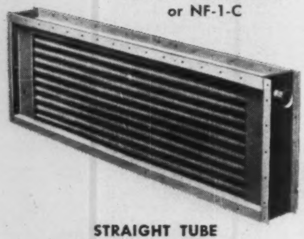
101 Greenway Avenue, Syracuse 3, N.Y.

Standardized Light-Weight Heat Exchanger Surface

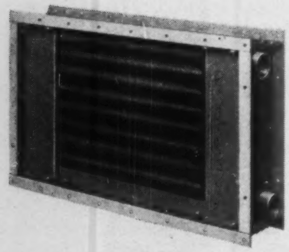
There is a factory-trained Aerofin application and service engineer located near you to give you prompt service. Write, wire or phone the factory.



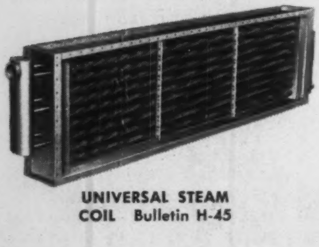
NON-FREEZE STEAM COIL Bulletin B-58 or NF-1-C



STRAIGHT TUBE BOOSTER STEAM COIL Bulletin H-45



HOT WATER BOOSTER COIL Bulletin HWB-50



UNIVERSAL STEAM COIL Bulletin H-45

Available in a wide range of sizes and types for heating, cooling, air conditioning and process, Aerofin is the modern standardized light-weight encased fan-system surface designed by *fan engineers* to meet present and future requirements of this highly specialized field.

All standard Aerofin units are furnished as completely encased units, ready for pipe and duct connections. The patented casings are built of pressed steel and are exceptionally strong and rigid to protect the unit from all strains of pipe connections and expansion or contraction in service. The casings are flanged on both faces, top and bottom, and template-punched for bolting adjacent units together or for easy duct connection.

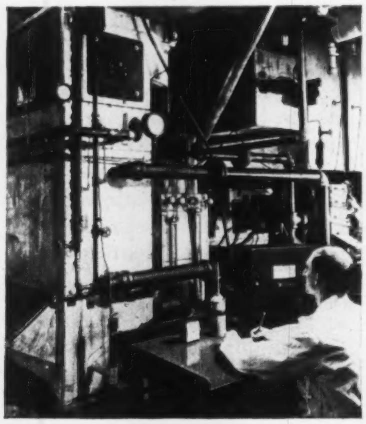
Guarantee

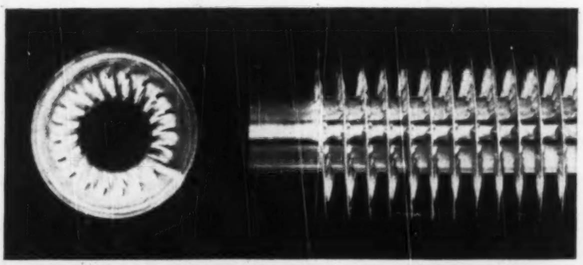
Aerofin is guaranteed, when properly installed and operated at pressures and temperatures not exceeding those specified, against failure or leakage due to faulty material or manufacture. The Aerofin Corporation will furnish a new unit, fob car Syracuse, N. Y., or Kingston, Ontario, for replacement of any unit found defective in either material or workmanship within one year from date of shipment of original unit, when such defective unit is returned to the factory at Syracuse, N. Y., or Kingston, Ontario.

Extended Surface Exclusively

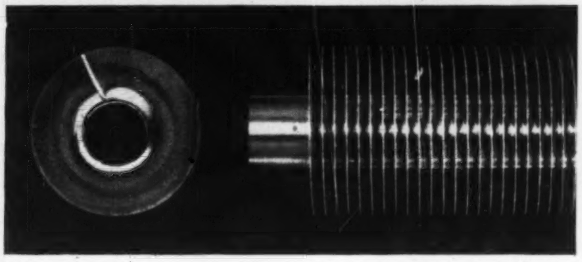
Aerofin manufactures light-weight extended-surface heat exchangers exclusively — not as a side line or accessory. Modern manufacturing, research and engineering facilities give real meaning to the Aerofin guarantee. Aerofin ratings are accurate — units may be safely installed to the full rated capacity.

Aerofin heat exchangers are rated according to accurate research laboratory test data and operate efficiently at full rated capacity.





Old Type Aerofin Surface with Crimped Fins



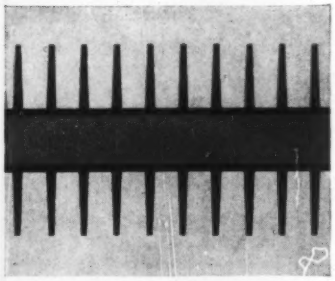
New Patented Aerofin Surface with Smooth Fins

Smooth-Fin Construction Provides Greater Capacity—Less Air Resistance

With air resistance and turbulence caused by the corrugations in the old-style fins now eliminated, note how many more fins can be used per inch of tube length. Note the extremely low air friction of this new design.

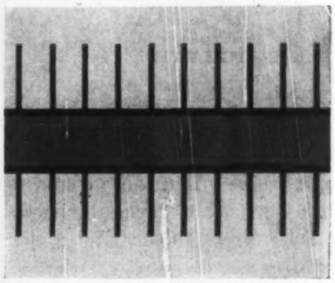
For optimum service, aluminum fins are spaced 14 fins per inch; copper, 12 fins per inch. Because of the low friction losses, high air velocities are entirely practical. This, combined with maximum heat transfer per sq ft of face area, results in extremely high heating or cooling capacity in relation to the available space.

For lower temperature differences, the tubes can be spaced on wider centers as required, or fewer rows may be used.



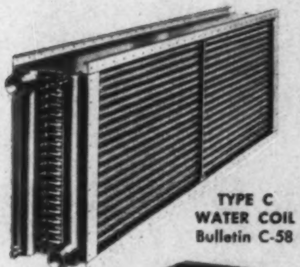
Aerofin Tapered Fin

The wide contact base of the new Aerofin tapered fin conducts sufficient heat between fin and tube to make the entire fin effective transfer surface. It is not necessary to crimp the fin to provide the required contact surface.

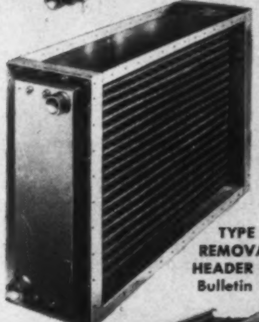


Conventional Straight Fin

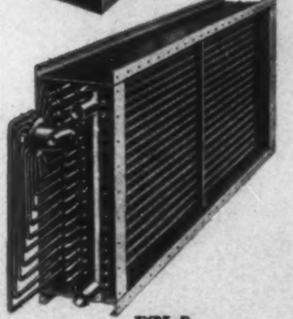
The relatively small amount of heat conducted by the small contact surface means that only a portion of the fin is effective heat transfer surface. Such fins are generally crimped to provide greater contact surface.



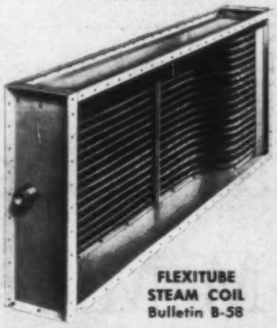
TYPE C
WATER COIL
Bulletin C-58



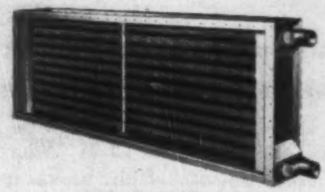
TYPE R
REMOVABLE
HEADER COIL
Bulletin R-50



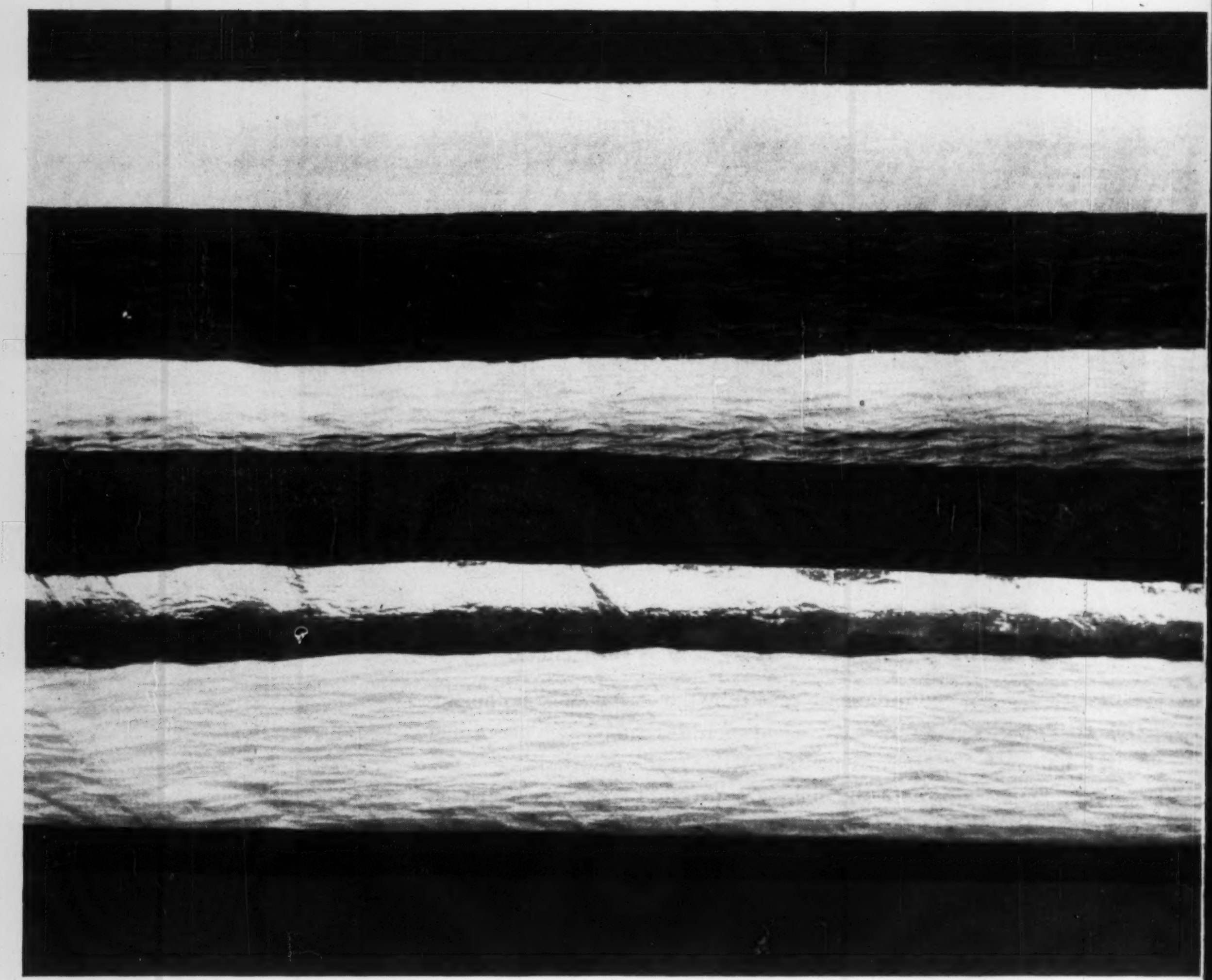
TYPE D
DIRECT EXPANSION COIL
Bulletin D-51



FLEXITUBE
STEAM COIL
Bulletin B-58



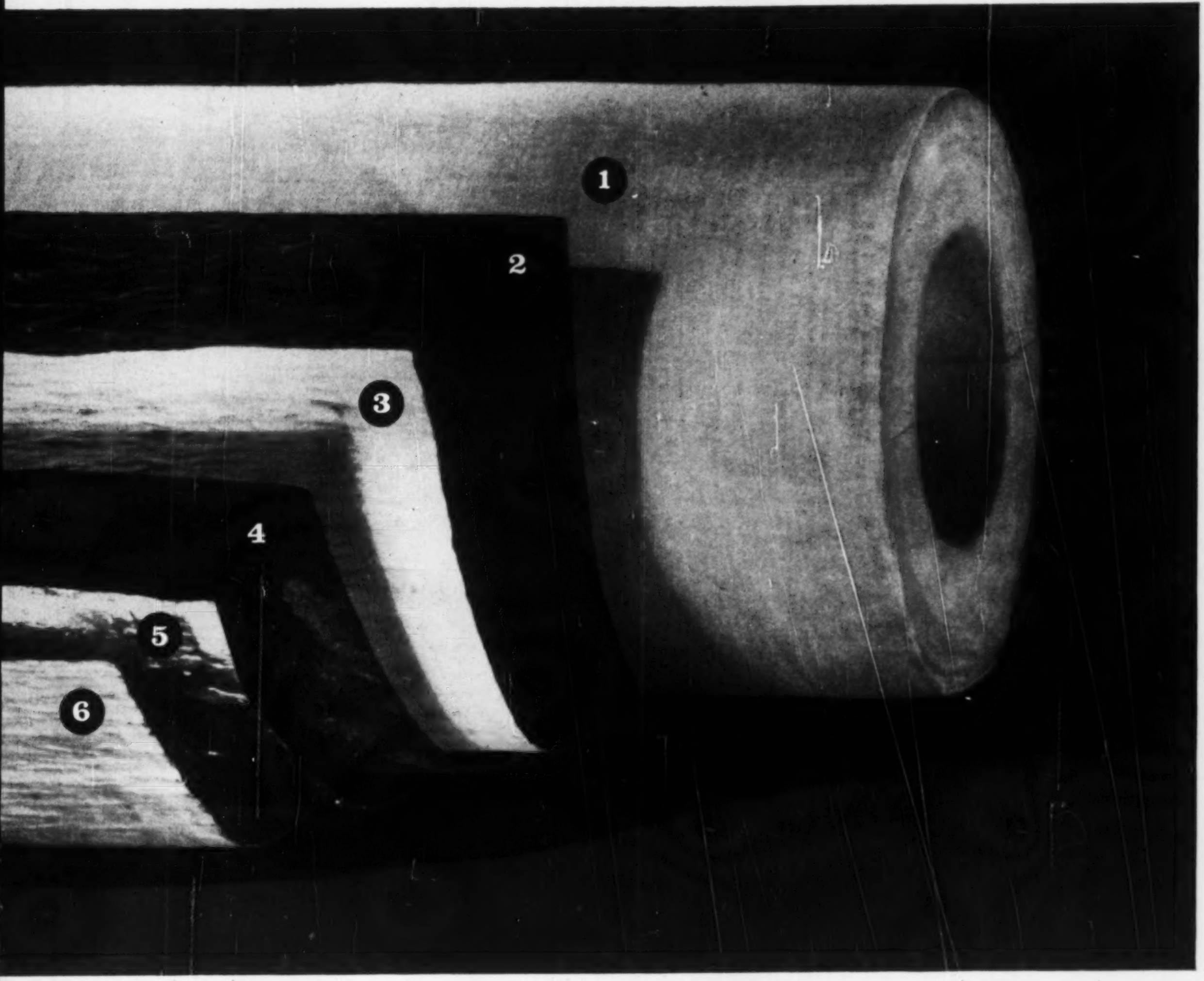
HIGH PRESSURE STEAM
COIL Bulletin H-45

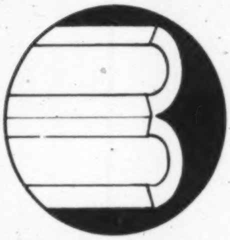


Name the service condition... J-M Micro-Lok has the jacket

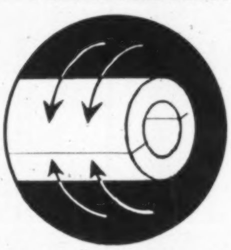
JOHNS-MANVILLE MICRO-LOK FIBER GLASS PIPE INSULATION OFFERS A COMPLETE LINE OF JACKETS FOR HEATING, COOLING AND PLUMBING APPLICATIONS

Prejacketing, plus J-M Micro-Lok's exclusive "spring-hinge" action, makes proper application so easy . . . so fast . . . so saving on job-hours. A remarkably low *k* factor assures lower fuel and power costs . . . hot or cold line protection from minus 120 F. to plus 370 F. Other Micro-Lok advantages: feather-light yet rugged resiliency; easily cut to fit joints, hangers or other irregularities. Sizes for all iron pipe and copper tubing and in all standard wall thicknesses.





OPENS EASILY FULL LENGTH



CLOSES AUTOMATICALLY

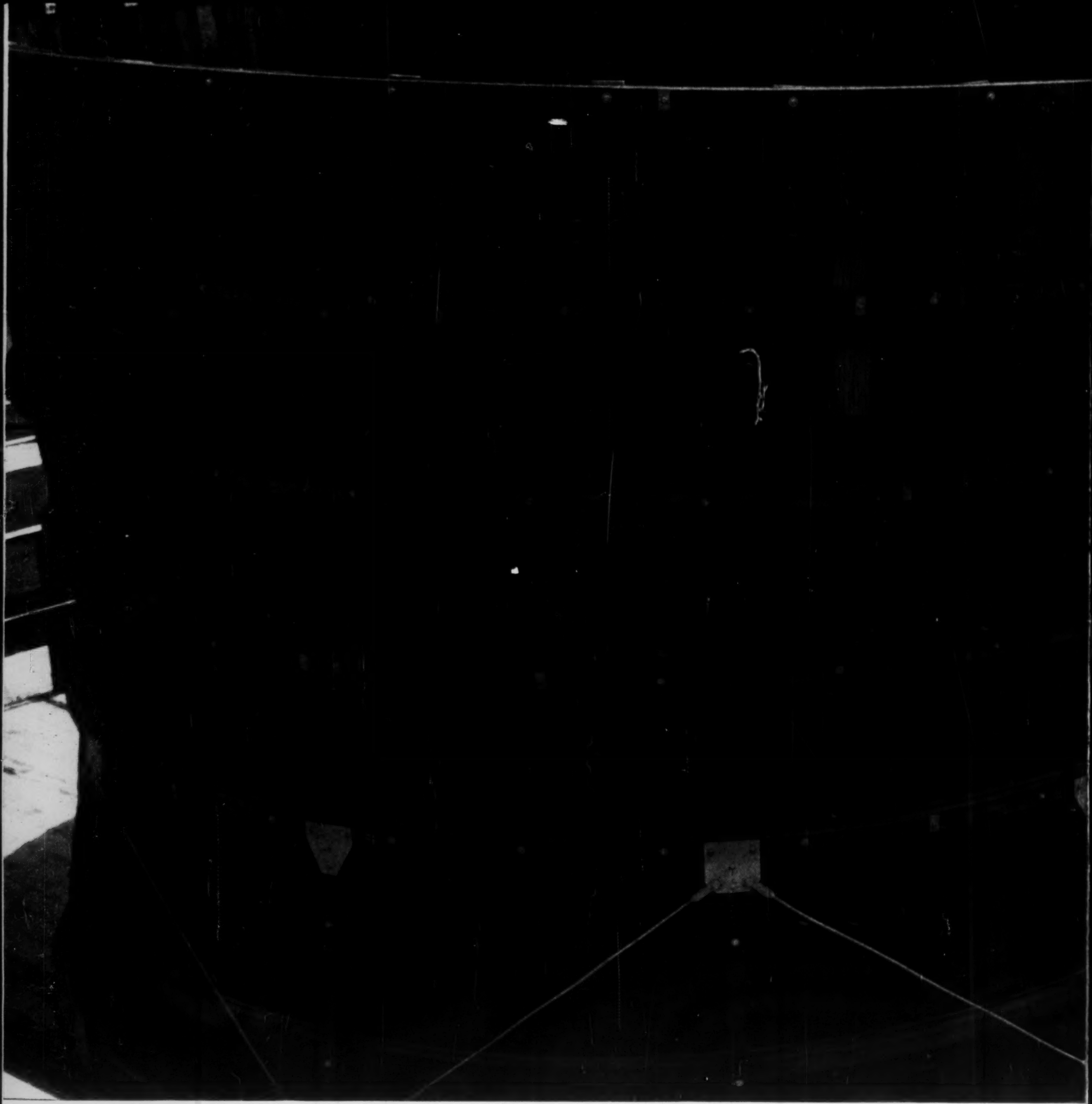
FACTORY-APPLIED JACKETS TO MEET HOT OR COLD OPERATING CONDITIONS

NAME	DESCRIPTION	APPLICATION
❶ **CANVAS**	4-oz., 6-oz., in addition to standard canvas. All weights available on all insulation thicknesses and sizes.	For exposed hot water supply lines; heating supply and return lines either steam or hot water.
❷ **DUAL TEMPERATURE** (Black)	Three-ply with 55-lb. black asphalt-impregnated kraft; 0.001" aluminum foil; and 55-lb. black asphalt impregnated kraft. Vapor transmission rate less than .02 perms.	Used for piping below 50 F. (to minus 120 F.) and where piping temperatures vary from cold to hot.
❸ **DUAL TEMPERATURE** (White)	Three-ply with 60-lb. white bleached kraft; 0.001" aluminum foil; and 55-lb. black asphalt-impregnated kraft. Vapor transmission rate less than .02 perms.	Used for piping below 50 F. (to minus 120 F.) and where piping temperatures vary from hot to cold.
❹ **WEATHER RESISTANT**	Three weights of asphalt-saturated felt available —35-lb., 45-lb., 55-lb.	For pipe insulation 1" thick and over; for all pipe sizes.
❺ **FLAME RESISTANT**	40-lb. flame retardant kraft paper laminated to 0.001" thick aluminum foil by a flame-retardant adhesive. Vapor transmission rate less than .02 perms. Aluminum surface is exposed.	Where codes or other requirements call for a fire resistant jacket.
❻ **GENERAL PURPOSE**	60-lb. white bleached kraft laminated to 0.00035" thick aluminum foil. Vapor transmission rate less than .05 perms. Available for ½" and ¾" thicknesses only in all pipe sizes.	Used for cold water and hot water service lines. Can be used instead of canvas on hot water and steam lines. (Not recommended for piping operating below 50 F.)

For full details call your J-M representative. Or, write Johns-Manville, Box 14, N.Y. 16, N.Y. In Canada: Port Credit, Ont.

JOHNS-MANVILLE
FIBER GLASS

JOHNS-MANVILLE JM PRODUCTS



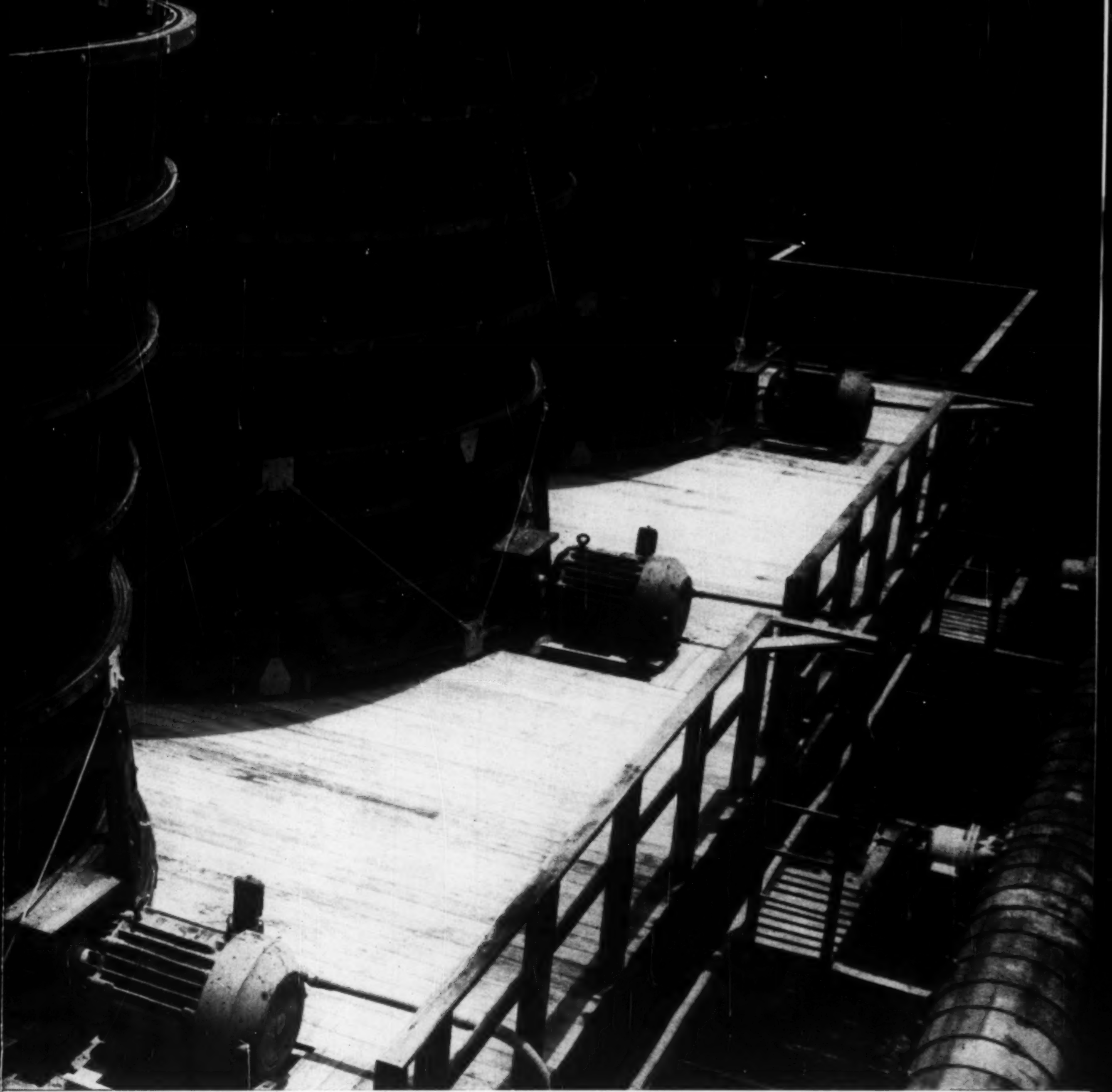
CENTURY MOTORS PULL HEAT

Forty-two stories above Dallas, on top of the South's tallest building, three Century 50 horsepower totally-enclosed fan-cooled motors are driving induced draft fans to keep the Southland Center cool.

A Century motor drives a 20-foot fan on each of three cells of this cooling tower. During the hot summer months, especially, the air conditioning of the immense Southland Center is dependent upon the continuous operation of these fans—and, upon the dependable, continuous operation of Century motors.

Heat absorbed by air-conditioning and refrigerating equipment must be removed efficiently. Maintaining efficient condensing temperature in a system of this large capacity, requires 20,000 gpm of cold water. And conservation of this gallonage with uniform performance at all times is necessary—the cooling tower is an important factor in the overall system.

Dependable Century motors are a vital part of installations such as this one where the continuous operation of the fans is so important. The three Century 50 horsepower, two-speed, totally-enclosed fan-cooled motors used in this installation are subject to all sorts of



OUT OF A 42-STORY BUILDING

unfavorable weather conditions—heat, moisture, rain, wind, corrosion. But they keep working . . . continuously. They keep working because these motors are made of strong, tough cast iron and will withstand the elements in unguarded outdoor locations.

These totally-enclosed fan-cooled motors are constructed so that no outside air (with dust, dirt, moisture, etc. in it) is circulated into the motors. Internal fans circulate *clean* air within the enclosed frames. An external fan blows air over the ribbed frames for maximum transfer of heat to the outside air. These Century motors can take it, because they are designed and built to handle such jobs.

Century application engineers throughout the country understand industry's motor requirements. Call the Century Office nearest you, or your Authorized Century Distributor for more information about Century's complete line of motors—from 1/20 to 400 horsepower.

CENTURY ELECTRIC COMPANY
St. Louis 3, Missouri *Offices and Stock Points in Principal Cities*

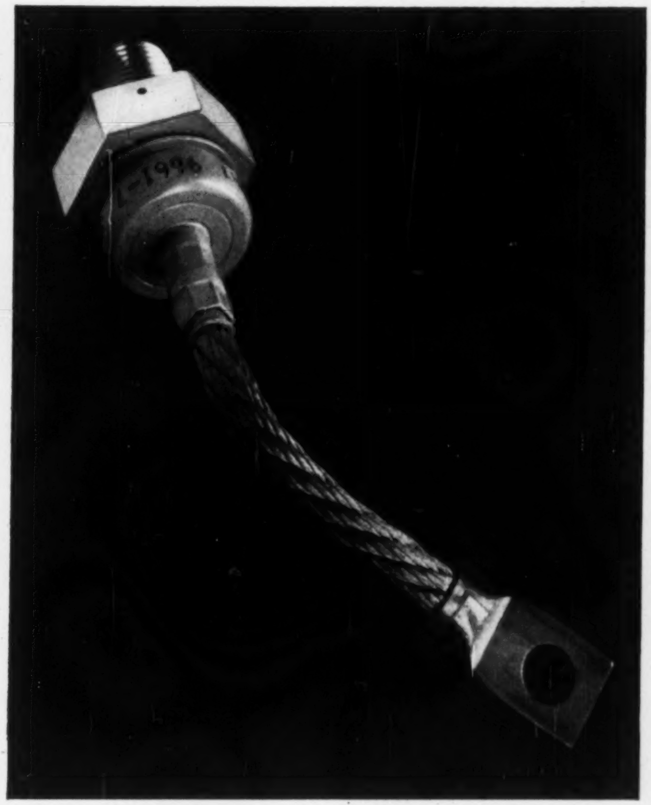
Century

59-24

It's what's inside that counts
SILICON RECTIFIERS

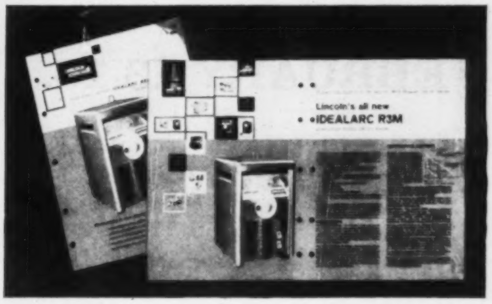
DON'T DETERIORATE

Because there is no gradual breakdown of a silicon diode, every LINCOLN Idealarc R3M three-phase rectifier welder will give top performance throughout its entire life. Here are the reasons why your welders should have silicon rectifiers.



Silicon rectifier diodes like this, used exclusively in the Idealarc R3M, are four times as efficient as selenium—increase welder efficiency—reduce power loss. Other important power considerations: balanced three-phase line draw—no starting surges—low idle current, about 15% of rated input.

Note the minimum spatter in this photo. Here, and in the picture on the opposite page, annealing furnace bases of 309 stainless steel are being welded. The Idealarc R3M's steep volt-amp curve insures minimum spatter while unique electrical design gives smoothest possible arc characteristics, both highly desirable in stainless steel welding.



The Idealarc R3M is available in sizes from 300 to 650 amps. For full details covering applications, performance features, construction, specifications, optional features and prices, write for Bulletin 4609.1. The Lincoln Electric Company, Dept. 3911, Cleveland 17, Ohio.

LINCOLN
WELDERS

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT AND ELECTRODES

An Invitation

DON TITUS,

president of Titus Manufacturing Corporation,
cordially invites
you to meet the Titus people and
see the very latest in the nation's finest
line of Air Distribution Products.

. . . at the

TITUS EXHIBIT

at the International Heating and
Air Conditioning Exposition, Booth 902,
International Amphitheater, Chicago...

FEBRUARY 13-16.

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- WATERLOO, IOWA
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you'll want to know...

Report Stresses Need for Better Air Cleaning, Air Pollution Control

THE DETERIORATION in the quality of the atmosphere that we breathe is becoming of major concern to engineers and health authorities today, and the trend is still downward, according to Arthur J. Hess, president of Hess-Greiner & Polland, Inc., as reported in the new Building Research Institute publication 797.

Mr. Hess recommended a two-pronged attack to reverse this trend in a discussion of "what is pure air?" One prong is the attack on smog at its source where pollutants can be prevented from forming, neutralized, or reduced before being emitted into the atmosphere. The other prong is the removal of pollutants from air to be used for ventilating or air conditioning in buildings.

While admitting that the problem of removing air pollutants from air still requires study, Mr. Hess pointed out that past and present research have made good progress in this direction. It is now possible to remove, by means of simple impingement or strainer type filters, or by water sprays, the bulk of particulate matter from the air. However, he continued, most of the smaller particles are not removed.

The filters described by Mr. Hess take different forms, depending generally on price classifications. One form, consisting of an impingement unit made of any one of several media available, is used until it is full of dirt. It is then thrown away and replaced. Another form consists of a unit that can be removed, cleaned, and returned to operation. Still another is automatic in operation, utilizing a revolving screen or dry medium that automatically renews itself.

Higher quality filtration, said Mr. Hess, is obtainable with electrostatic cleaners or submicron particulate air filters. Both will remove the fine particles and bacteria in addition to the larger particles.

Gases present a different problem, particularly when they produce an odor. According to H. L. Barnebey, vice president of Barnebey-Cheney Co., odors and most gases can be controlled effectively and inexpensively. Activated charcoal adsorption, he said, removes all odors and most toxic gases. He added that this is a widely-used method of air treatment.

That air pollution can most effectively be controlled at the source is the belief of Louis C. McCabe, president of Resources Research, Inc., as expressed in the BRI report. However, he added, with the increase in industrial and other human activities, the amount of pollution that escapes tends to grow in spite of the most effective means of control.

Perhaps the most controversial propositions made were by William L. McGrath, chief engineer of Carrier Corp. In speaking about new concepts for obtaining better air quality, Mr. McGrath said that a substantial exclusion of outside air from our living and working areas and the total treatment of the air in these spaces is highly desired. He recommended that this concept be accepted as a key principle in the design of our schools, offices, plants, and other structures because "this is the only way we can control the quality of the air we breathe."

Copies of the complete report, "Cleaning and Purification of Air in Buildings" can be purchased for $4.00 from the BRI, Div. of Engineering and Industrial Research, National Academy of Sciences-National Research Council, 2101 Constitution Ave., N.W., Washington 25, D.C.

you'll want to know

AMCA Issues Standard Test Code For All Air Moving Devices

Uniform methods for conducting tests on all types of air moving equipment are now available in the Standard Test Code recently issued by the Air Moving and Conditioning Association, Inc.

The Code is based on research sponsored by the association and conducted at the University of Detroit engineering laboratories. Nine years of intensive effort were spent in the compilation of material now being presented.

The 1960 Code (Bulletin 210) is designed to provide more accurate data upon which equipment performance ratings may be based. Featured subjects include nozzle test methods, directions for calculating the effect of compressibility, and other engineering advances. Copies may be obtained from AMCA, 2159 Guardian Building, Detroit 26.

H I Revises Pump Standards

The 10th edition of the "Standards of the Hydraulic Institute" has been revised and is being made available to interested parties by the Hydraulic Institute. The standards include centrifugal, rotary, and reciprocating pumps.

Numerous clarifications and corrections involving drawings, nomenclature, and text were made along with the inclusion of:

- New definitions: flooded suction, specific speed, and self-priming pumps.
- Dimensions of NEMA type C face-mounted motors.
- Shaft extension dimensions for NEMA type P vertical solid shaft a-c motors.
- NPSH charts for centrifugal hot water pumps, single and double suction.
- Revisions in the test code for centrifugal pumps.
- Calculation of volumetric efficiency of reciprocating pumps, using compressibility factors for water and for hydrocarbons.

A set of those pages in the old edition which are affected by the revision can be purchased alone for insertion in the loose-leaf cover of the old edition.

Complete copies of the standards can also be purchased from the Institute at 122 E. 42nd St., New York 17.

Charles S. Leopold Dies At 64; Member HPAC Board Of Contributing Editors

Charles S. Leopold, consulting engineer and a member of the HPAC Board of Consulting and Contributing Editors, died November 24 after suffering a heart attack while attending a football game. He was 64 years old.

Internationally known for his work in the heating, ventilating, and air conditioning fields, Mr. Leopold was founder and head of his own firm, Charles S. Leopold Engineers, Inc. A noted author, many of his articles appeared in HPAC.

Mr. Leopold was a member of the American Society of Heating & Air Conditioning Engineers and a past president of the American Society of Refrigerating Engineers, predecessor societies of the American Society of Heating, Refrigerating and Air-Conditioning Engineers. He received the F. Paul Anderson medal from ASHAE in 1955 for his many contributions in the heating and air conditioning field.

Bruch and Morrow, Consulting Engineers Name Three Associates

Three men have joined Bruch and Morrow, Inc., Consulting Engineers, Minneapolis, as associates. The firm's name is new, having formerly been Bruch, Morrow and Knafla, Inc.

The new associates are Donald C. Campbell, registered mechanical engineer; John M. Quealy, registered electrical engineer; and Frank K. Johnson.

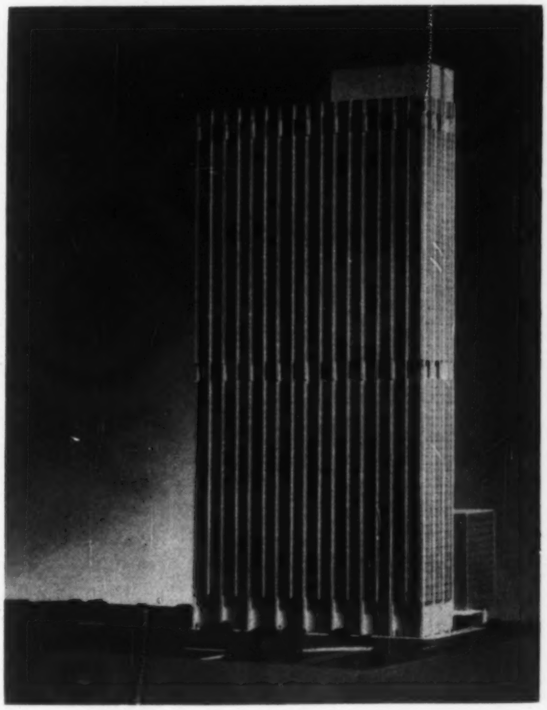
Construction Will Rise As General Economy Dips

Construction will be a bright spot on the economic horizon in 1961 despite an expected mild dip in general business activity, according to the annual outlook statement recently released by the F. W. Dodge Corp. In fact, Dodge economists expect a slight increase in construction contracts for the year.

Some segments of construction, particularly those involving business spending, may go down this year, but public projects, which account for more than a third of the total, should show strength. Total construction is estimated to amount to some $35.8 billion, a gain of one percent over the estimated 1960 level.

Total nonresidential construction is estimated to amount to $11,560 million, down two percent from 1960. This, however, is offset by the rise in public works and utilities which is expected to be $8900 million, a five percent increase.

VERTICAL DUCTS appear as alternate columns casting shadows on the side of the new 35-story building



Air Conditioning System Provides Beauty as Well As Inside Comfort

THE air conditioning system of a new 35-story skyscraper to be built in downtown Los Angeles will be more than just an interior comfort feature, according to the Certified Refrigeration and Air Conditioning Foundation. The system is being utilized by the designers of the project as one of the principle design highlights in the structure's exterior appearance.

To be known as the 333 West Sixth Building, the skyscraper will occupy more than an acre of land and will have a total area of 615,000 sq ft.

The $20 million building will incorporate a high velocity perimeter system with vertical distribution exposed and running the full height of the structure. Vertical aluminum ducts, dividing the spandrel panels on the exterior walls, serve the dual purpose of enhancing the aesthetic value as well as increasing the amount of usable floor space.

The distribution systems will be divided so that they will feed down from the roof, up and down from an intermediate level, and up from the second floor. In addition to these systems, a separate distribution system will be provided to handle the internal areas created by office layout.

Cooling for each room will be obtained from a chilled water distribution system as well as a percentage of conditioned air supplied from a central fan. This will be the primary air and will amount to approximately one-third of the cooling required. The remaining two-thirds will be handled by room conditioning units located under windows.

Heating will be provided by primary air from heating coils located in the fan rooms. Electrostatic and activated carbon filters will remove dust and odors from the air.

Room temperature control can be manual or automatic. With the manual type, each room will have a thermostat so that a constant temperature can be maintained in the room regardless of outside conditions or internal loads.

The building was designed by Charles Luckman Associates, Los Angeles engineering, architecture, and planning firm. The project engineer is Charles Gable.

HPAC Index for 1960 Available Soon

FOR YOUR convenience the editorial contents of Heating, Piping & Air Conditioning are indexed annually. The 1960 index, now in preparation, will be available to subscribers early this year.

To obtain your free copy, write the Editor, Heating, Piping & Air Conditioning, 6 N. Michigan Ave., Chicago 2.

C. E .C. Board Rejects Corporate Practice Model Law

CORPORATE PRACTICE was just one of the more than 50 problems which were discussed at the 1960 semi-annual meeting of the Consulting Engineers Council. Professional ethics, package deals, public relations, and private enterprise also got their share of attention.

The C.E.C. Board voted overwhelmingly to reject the National Council of State Boards of Engineering Examiners' model law dealing with corporate practice. The N.C.S.B.E.E. law requires employee registration, but not necessarily by firm officials. C.E.C. feels all principals concerned should be registered, including officers and major stockholders.

A jointly-proposed (by C.E.C., ASCE, and AICE) revision to the recommended law was also criticized by C.E.C. directors. The Board called for a clarification of whether or not corporate officials must be registered in all states in which the corporation provides engineering services.

Council president, Hueston M. Smith, pointed out that a basic problem may be public interpretation of the term "practice," a word used in all engineer registration laws. "The matter is real simple," he continued. "In our profession, the man who provides engineering services direct to the public is 'practicing' engineering. If he provides these services for a corporation, he is 'performing' engineering." This concept was referred for further study to a special committee, headed by Samuel A. Bogen of New York City.

Ethics

The difference between legal and ethical violations by engineers was sharply defined by Joe Williamson, Jr., long-time committee chairman. "Too often," said Mr. Williamson, "engineers in private practice look to the State Boards to investigate, prosecute, and pass sentence on both legal and ethical violations. Ethical violations do not conflict with state laws, they are a matter for other engineers, not for a legally-constituted body such as a State Board." He suggested that one remedy to the problem may be the development of more effective, brief, practical, and equitable local recommended minimum fee schedules, with "built-in" ethics applicable to local situations.

The problem of package deals, which many consultants oppose as unethical, was singled out for special attention by the C.E.C. Board. Adopted was a resolution recommending that:

". . . conflict of interest between engineering and contracting for construction be avoided so that the engineer can act solely in the interest of his client . . . and further, that any engineer engaged to provide engineering services for public work, have no financial interest in any firm bidding on, or in any way offering to contract for, construction of that project."

Concern was also expressed over reports of competitive bidding between professionals. A resolution

C E C
COUNCIL

C.E.C. PRESIDENT Hueston M. Smith presents organization's first annual Merit Award for advertising which "highlights the aims and principles of the consulting engineer." Accepting the award for the winning company, the Minneapolis-Honeywell Regulator Co., is R. H. Jacobs, advertising coordinator for the firm's Commercial Div. AT RIGHT, J. Gibson Wilson, Jr. (left) accepts a new membership portfolio from C.E.C. secretary, George J. Toman. Mr. Wilson represented metropolitan Washington, D.C., C.E.C.'s 32nd and newest member

Kalman Steiner Dies at 58; HPAC Contributing Editor

KALMAN STEINER passed away last month after suffering a stroke in his home. He was 58 years old.

A member of HPAC's Board of Consulting and Contributing Editors, Mr. Steiner wrote five books and a manual on the subject of fuel oil. He was a member of the American Society of Mechanical Engineers, the Maryland Society of Power Engineers, Sigma Alpha Mu and Phi Beta Kappa.

Mr. Steiner was owner and manager of the Baltimore office of the Central Fuel Co. He joined Central after 11 years as a consulting engineer for the Hoffberger Co. During World War II, he was employed by the War Department as an industrial consultant.

was prepared for submission to the E.J.C.-A.I.A. Joint Committee calling attention to the advantages of selecting architects and/or engineers on the basis of professional qualifications and ability.

Public Relations

The C.E.C. public relations program was compared with that of doctors, lawyers, and accountants by public relations committee chairman, J. Donald Kroeker. The results indicated that big strides are being made in this area by consulting engineers. A special brochure was unveiled at the meeting entitled "Guide To The Preparation Of A Consulting Engineering Firm Brochure." The brochure is designed to assist C.E.C. members in the preparation of their own brochures describing the qualifications, size, and experience of their firms.

Council members were urged to promote Congressional support of the free enterprise system. Attention was called to the appointment of two C.E.C. members to two important U.S. Chamber of Commerce policy committees.

One of the social highlights was the semi-annual dinner-dance. Guest of honor at the banquet was Dr. J. C. Warner, president of Carnegie Institute of Technology, who pointed up the consultant's "moral obligation" to prevent a squandering of the nation's scientific and engineering man-power. According to Dr. Warner, "expansion of Government-sponsored research will absorb at least half the new Ph.D.'s in physics and engineering, which will be produced during the next decade."

C.E.C. BOARD OF DIRECTORS from 32 member associations gathered at the Penn-Sheraton Hotel in Pittsburgh for organization's semi-annual meeting

Another feature was the inauguration of a special award for "excellence in advertising which has mentioned the consulting engineer favorably, and has invited public attention to the value of the consulting engineer's services." Winner of the initial award was the Minneapolis-Honeywell Regulator Co. R. H. Jacobs, manager of advertising and sales promotion, accepted the award in behalf of his company.

Once again, delegates were present from all 32 C.E.C. Member Associations, thus extending the attendance record back to the Council's founding. Another record, that of accepting at least one new Member Association at every meeting, also remained intact with the approval of a membership application submitted by a group from Washington, D.C. J. Gibson Wilson, Jr. was formally welcomed to the Board as the official representative of the Washington, D.C. group.

Government Official Tells Perils of Air Pollution

THE PROBLEM of air pollution and how the Public Health Service is working to alleviate this condition was the subject of an address by Arthur Stern presented at a recent meeting of the Louisville, Ky. chapter of the American Society of Heating, Refrigerating and Air Conditioning Engineers. Mr. Stern is Chief of the Laboratory of Engineering and Physical Sciences, Division of Air Pollution, U.S. Department of Health, Education and Welfare, Public Health Service. He is located at the Robert A. Taft Sanitary Engineering Center at Cincinnati, O.

The Public Health Service operates a network of air sampling stations across the nation with at least one station in every major population center and one in each state, according to Mr. Stern. Samples from these stations are sent to various institutes for analysis at least 26 times a year.

Most air pollution is caused by complex molecules created by the combustion of fuels, he noted. Synthesis also occurs by the action of radiation from the sun on elements in the atmosphere and by lightning discharges. Other processes oxidize these compounds making larger molecules and thus creating smog conditions.

From the more than 30 substances for which analyses are be-

you'll want to know

ing made, benzo (a) pyrene is suspected to be the most dangerous. Also known as 3-4 benzpyrene, this substance is an index of a large class of poly-nuclear hydrocarbons of presumed carcinogenic significance; in other words, a cause of cancer.

The amount of this substance inhaled in a year's time for various areas was compared to the amount inhaled in smoking a package of cigarettes a day for a year.

Measured in micrograms, the following results were presented:

Non-urban air	1
Air in City "A"	20
Cigarettes smoked as stated	60
Air in City "B"	110
Air in City "C"	150

As would be expected, the analyses showed that heavy industrial areas were the main contributors of air pollution. In fact, it is suspected that air pollution concentrations over non-urban areas originate in urban areas. The eastern part of the country has higher levels of air pollution than does the western part. The seasonal variation in both parts are similar, with the high level being in the winter. This last fact is related to either fuel usage or atmospheric oxidation.

AGA Sponsors Gas Air Conditioning School

A FULL COURSE of the technical and sales aspects of gas air conditioning was held last month in Columbus, O., sponsored by the American Gas Association. Enrollment was limited to 150 and consisted of employees of gas equipment manufacturers and dealers, gas companies, and present and prospective gas customers.

Some of the subjects discussed were:

Air Conditioning distribution systems, by A. L. Jaros, Jr., Jaros, Baum & Bolles.

Gas engine drives, N. K. Hall, Ready Power Co.

Steam turbine drives, J. J. Boyle, Worthington Corp.

Gas turbine drives, C. R. Apitz, Clark Brothers Co.

Absorption systems, P. E. Chamberlin, The Gas Service Co.

Boilers, W. F. Zunker, Cleaver-Brooks Co.

Comparative cost analysis, M. E. Orelup, Oklahoma Natural Gas Co.

Service recommendations, F. J. Sylvia, Ohio Fuel Gas Co.

A comprehensive report of the information presented is being prepared for publication in an early issue of HPAC.

Quality Pipe Welding Urged by Bureau

AN OPEN LETTER to industrial management urging the acceptance of specifications for pipe welding has been mailed to various parties throughout the industry by the National Certified Pipe Welding Bureau.

The specifications state that all welding shall be done in accordance with the welding procedures of the Bureau, or any other approved procedure, conforming to the requirements of the ASME boiler and pressure vessel code or the ASA Code for Pressure Piping. It further states that welders should be certified by either a local chapter of the Bureau or a similar locally recognized testing authority.

Also in the letter, which was in the form of a four page bulletin, were 20 standard procedure specifications for pipe welding that are available to members of the Bureau. These standards have been tested and approved and will cover practically any welding requirement that could arise in the piping industry.

For more information, the National Certified Pipe Welding Bureau may be contacted at 45 Rockefeller Plaza, New York 22.

Thomas J. Ryan, MCAA Exec Vice President, Dies in NY Air Disaster

THOMAS J. RYAN, executive vice president of the Mechanical Contractors Association of America, Inc., was one of those who died in the collision of two airplanes over New York City on December 16. He was 38 years old.

An expert on labor law and legislation, Mr. Ryan came to MCAA as its executive secretary in August 1959 from his position as Assistant General Council of the National Labor Relations Board. He was elevated to the executive vice presidency last May.

As spokesman for the 1200 heating, piping, and air conditioning contracting companies who make up MCAA, Mr. Ryan was often called upon to travel and speak throughout the country. It was while returning from a trip that the accident occurred.

Fluids Controls Institute Forms Section Covering Safety and Relief Valves

A NEW SECTION covering safety and relief valves was formed in the Fluid Controls Institute, Inc., at its fall meeting held at The Drake Hotel in Chicago on November 20-22, 1960. The review and establishment of performance standards and other rating data for the products will be the section's main responsibility.

Also in the process of formation at the meeting whose theme was "Inventory and Product Control" was the establishment of a section for strainers and filters.

How to Cool a Church

. . . without spoiling architectural beauty

Church Installations of air conditioning systems offer a challenge to the consulting engineer and mechanical contractor, especially when large equipment and ductwork must be integrated with the structures so as not to mar their architectural beauty.

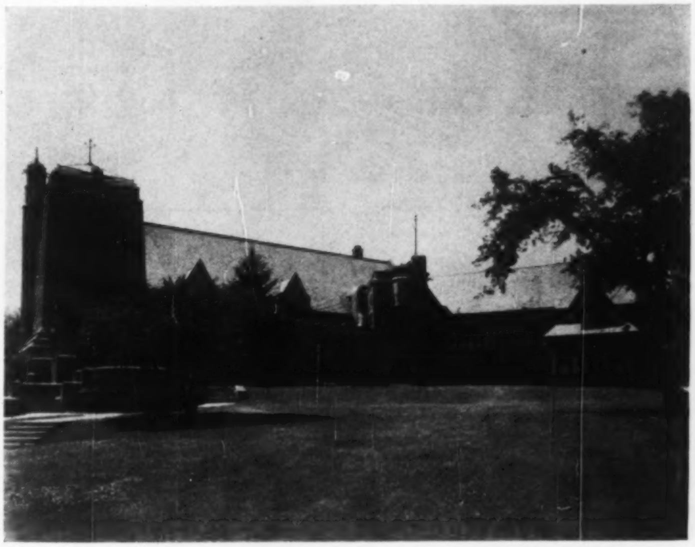
This was the case in planning a 71-ton air conditioning system for the Grace Methodist Church in Dayton, O. Trustees required that the building's architectural integrity not be violated, either on the interior or exterior.

To accomplish this, it was necessary to hide two 20-ton water cooled units, each approximately 8 ft wide and 8½ ft high. These cool the church's 700 seat sanctuary, according to the Chrysler Airtemp Div. of Chrysler Corp. The unit on the street side of the church was hidden behind a parapet situated over the center entrance. The other unit is behind the church itself, and therefore out of view.

Open spaces inside the church made it impossible to conceal interior ductwork, so it was installed along the exterior on the lower section of roof. This exterior ductwork on the street side is painted to resemble masonry construction, even including painted mortar joints. It can be seen leading from the parapet by careful observers.

The ductwork feeds supply grilles located on the interior archways. Installed through 24 in.-thick masonry, these grilles discharge low velocity air. This, with the use of acoustical lined ducts, maintains an exceptionally low sound level.

Return air from the sanctuary of the church is taken through air shafts located behind the pulpit and the baptismal font.



A 20-TON PACKAGED AIR CONDITIONER is located on the roof behind the parapet above the center entrance. Ductwork, painted to resemble the masonry walls, runs from the cooling unit to supply grilles in the sanctuary

SUPPLY GRILLES can be seen above the archways on the left and right sides of the sanctuary. Return air is taken through air shafts located behind the pulpit and baptismal font

A balcony in the sanctuary is cooled by two 23,000 Btu per hr room units. They are located in a bell tower no longer used for bells. Ducts run down from the units to the balcony's ceiling.

A room unit was also installed

in the pastor's study and ducted to its ceiling. Casement units are used in three other offices. They do not, however, protrude outside of the windows.

Other areas required room and packaged units, some of which are controlled independently from other church areas.

In addition to maintaining summer attendance, which was a prime factor in ordering the cooling installation, the system has also been beneficial in keeping the church interior clean and quiet. Dust, dirt, and pollen are removed from the air, reducing maintenance and decorating costs. Since the windows and doors are closed, traffic and street noises are eliminated during services.

ARI Elects Officers for 1961; R. K. Serfass President

THE PRESIDENT of the Air-Conditioning and Refrigeration Institute for 1961 is R. K. Serfass, manager of Westinghouse Electric Corp.'s Air-Conditioning Div. He succeeds Rudolf G. Berg, vice president of Copeland Refrigeration Corp.

In his inaugural address November 21, 1960, at Hollywood Beach, Fla., site of the ARI Annual Meeting and his election, Mr. Serfass reviewed the accomplishments of the ARI during the last four administrations. Creation of a program of standards, a great emphasis on certification and on profitability of the entire industry, and internal reorganization were singled out as major contributions.

Continuing, he outlined the specific objectives of the Institute for 1961. Categorizing the objectives, they are as follows:

Financial—

1. Increased profitability through a greater awareness of ARI's present position, now documented for 1958 and 1959 and soon to be documented for 1960.
2. Consolidation with other trade associations in the industry to reduce overall costs to individual companies by eliminating duplication of effort.
3. Pursuit of revision of tax laws to offset the high cost of research and development.
4. Discipline in the conduct of ARI affairs to accomplish objectives at the lowest possible cost.

Marketing—

1. Dissemination of maximum amount of statistical information in market trends within the industry, measured by shipments of products.
2. Promotion of the benefits of air conditioning and refrigeration as compared to the benefits of such things as cars, recreation, and travel.

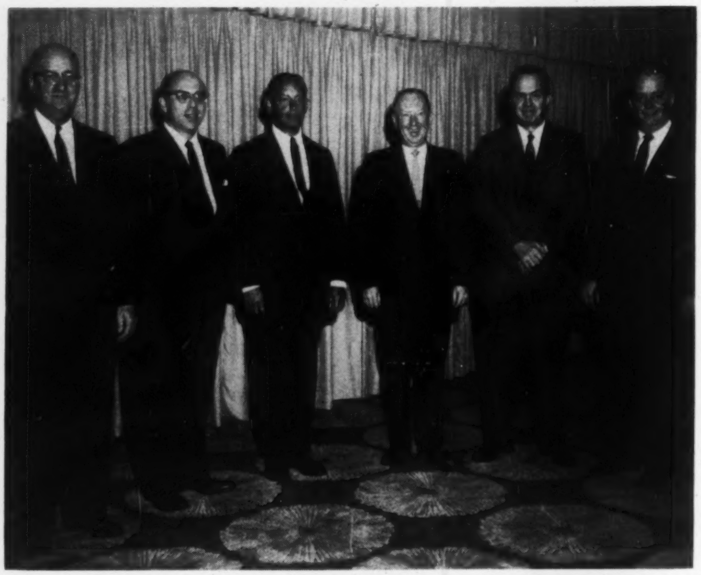
Engineering—

1. Continued relentless emphasis on standards which represent the industry consensus on product designs of acceptable quality.
2. Continued emphasis on certification.

Administration—

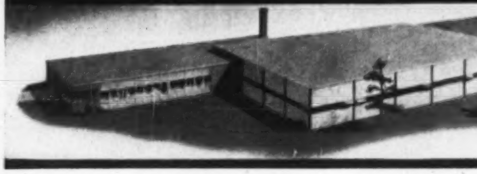
1. Encouragement of sections in their various projects.
2. Growth in membership.
3. Development of trained installation and service personnel.

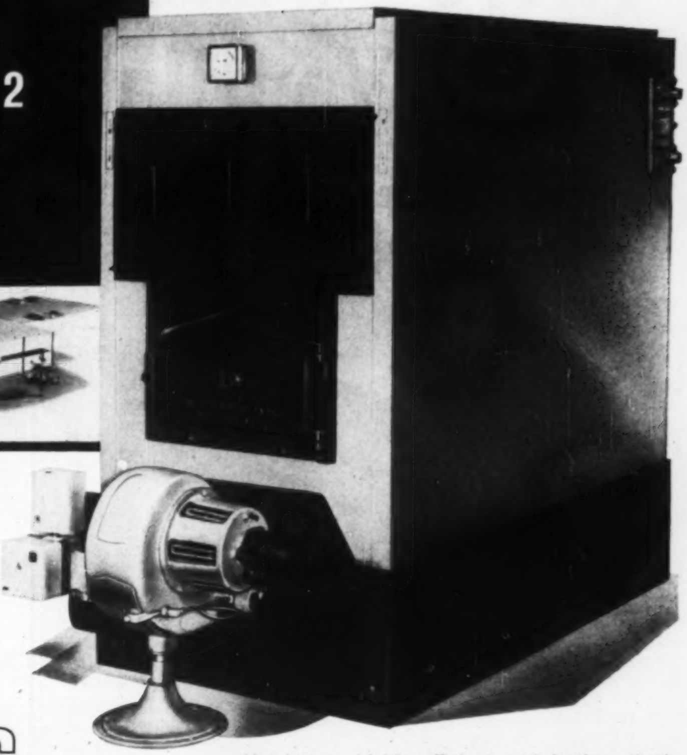
Other officers elected include three vice presidents and a treasurer. Vice presidents are Russell Gray, president of Carrier Air Conditioning Co.; L. N. Hunter, director of engineering, Crane Co.'s Plumbing, Heating & Air-Conditioning Group; and F. J. Kreissl, president, Detroit Controls Div. of American Radiator and Standard Sanitary Corp. Elected treasurer was W. H. Aubrey, president of Frick Co.



ARI OFFICERS for 1961 are (l to r) W. H. Aubrey, president of Frick Co., treasurer; F. J. Kreissl, president of Detroit Controls Div., American Radiator and Standard Sanitary Corp., vice president; R. K. Serfass, manager of Westinghouse Corp.'s Air Conditioning Div., president; Rudy Berg, vice president of Copeland Refrigeration Corp., immediate past president; L. N. Hunter, director of engineering for Crane Co.'s Plumbing, Heating and Air-Conditioning Group; and Russell Gray, president of Carrier Air Conditioning Co., vice president.

If your problem is EFFICIENT HEAT AND HOT WATER with No. 2 Oil for the medium-sized building . . .





your best answer is the . . .

2500

Smith-Mills

BOILER-BURNER UNIT

Handsome, highly efficient and lasting, that's the Smith-Mills 2500. Many features including vertical water tube construction, extended fin surfaces, heavy fibre glass insulation to prevent heat loss, unusually clean burning precision built burner of high combustion efficiency.

PROVIDES 452 to 962 MBH FROM 5 to 10 SECTION BOILERS

The next time you are about to specify an oil-fired heating unit for a commercial building of moderate size, consider the Smith-Mills 2500. It is available for either hot water or steam and in six sizes. It uses No. 2 oil and has a burner capacity of 4.45 to 9.25 gallons. Electronic control is standard on the 8, 9 and 10 section boilers. It is available optionally on the 5, 6 and 7 section boilers.

The Smith-Mills 2500 is ideal for restaurant, garage, motel, store or small factory use. This integrated unit is designed to furnish trouble-free heat *and continuous hot water service* with a minimum of boiler room supervision and maintenance. Sections of rugged cast iron assure extra-long life. Extra-long flue travel assures greater efficiency and economy.

Detailed descriptive folder available on request. Write:

Optional built-in tankless or tank water heater. Tankless sizes from 4 to 12 gallons per minute; tank heaters are also available for tank sizes up to 240 gallons: 180° hot water.

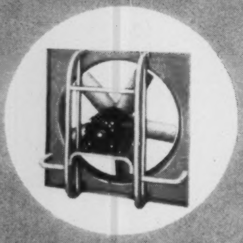
H.B. Smith CAST IRON BOILERS

H. B. SMITH CO., INC., WESTFIELD, MASSACHUSETTS • Established 1853

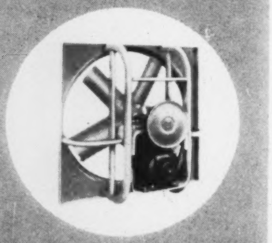
There's a *Power Line* Fan for Every Ventilating Problem

Specify Power Line—the most complete line—and you get the right model and capacity to fit your need!

LOW PRESSURE FANS

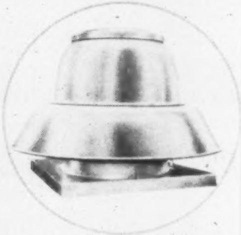


Direct Drive, general ventilating fans size 10" through 48", with non-overloading steel blades. 700 cfm—37,500 cfm.

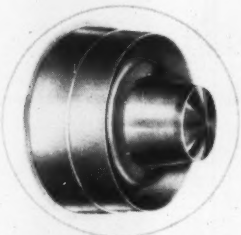


Belt Drive, general ventilating fans all ball bearing in sizes 24" through 108", with non-overloading steel blades. 5,000 cfm—164,000 cfm.

DOME EXHAUSTERS

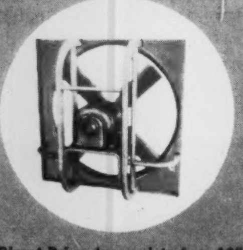


Direct drive and belt drive centrifugal roof exhausters. Low silhouette, overlapping wheel. More air at lower tip speeds, 6" through 36", 160 cfm—14,300 cfm.

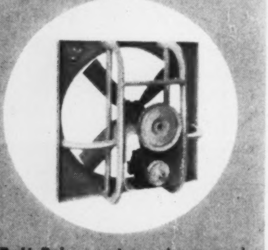


Direct drive centrifugal wall exhausters with non-restrictive discharge design in sizes ranging from 6" through 16" and air capacity from 100 cfm—2,000 cfm.

HIGH PRESSURE FANS

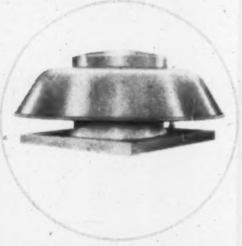


Direct Drive, heavy duty fans 16" through 48" sizes, with non-overloading cast aluminum air foil section blades. 2,900 cfm—36,600 cfm.

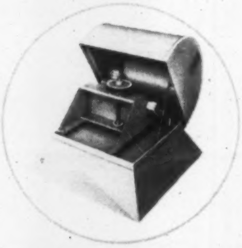


Belt Drive, extremely rugged pressure fans moving between 5,450 cfm and 27,100 cfm at higher than normal static pressure, fan sizes 24" through 48".

ROOF VENTILATORS

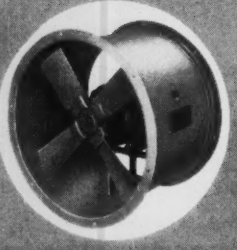


Axial flow, spun aluminum housing, low, low silhouette roof ventilators available in direct and belt drive, sizes 18" through 36", 700 cfm—14,000 cfm.

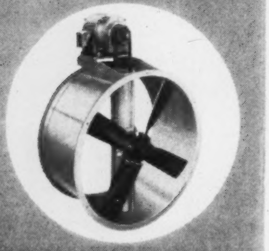


Rugged steel centrifugal roof ventilators. All welded. Unique overlapping wheel design. Sizes 16" through 36".

TUBE AXIAL FANS

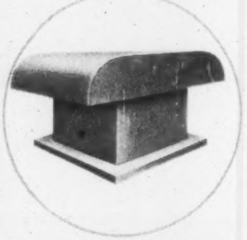


Direct Drive duct booster fans to move fumes, smoke, dust and steam against high static pressures, 16" through 48" sizes, 2,900 cfm—36,600 cfm.

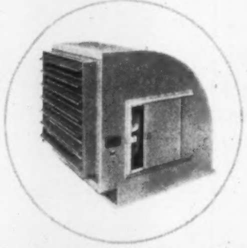


Belt Drive, motor out of air stream, protected drive, duct fan for paint spray booth or range hood installations, sizes 16" through 48", 2,800 cfm—37,500 cfm.

AXIAL VENTILATORS

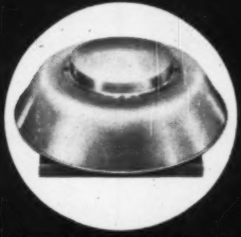


Axial roof ventilators. Extremely low silhouette design. Direct or belt drive. Exhaust or air supply. 12" through 48". Capacities 1,100 cfm—25,000 cfm.

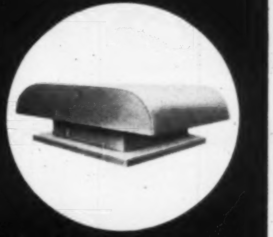


Penthouse ventilators for all general ventilating systems. Completely assembled. Available in sizes 12" through 60". 1,200 cfm—40,000 cfm.

RELIEF VENTILATORS

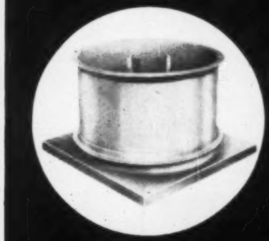


Extremely low silhouette spun aluminum units. Provide roof line uniformity with power exhausters. Used for intake or relief. Sizes 12" through 36".

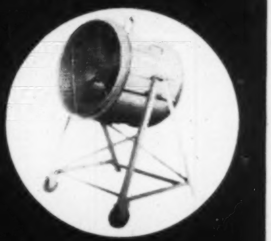


Low silhouette relief ventilator. Companion to powered ventilators. Available in 12" through 48" sizes. Lockseam construction. Dual pivoted hood.

UP-BLAST VENTILATOR AND AIR BLASTERS

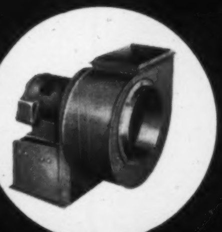


Direct drive and belt drive vertical discharge roof ventilators. Weatherproof construction. Sizes 16" through 48", 2,900 cfm—36,600 cfm.

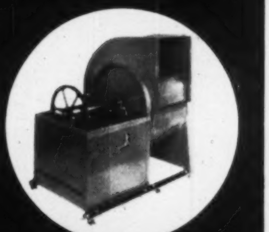


Direct drive air blaster, high velocity fans for spot cooling or general air circulation. 18" through 42" sizes, 5,500 cfm—33,600 cfm.

DIRECT DRIVE UTILITY BLOWERS

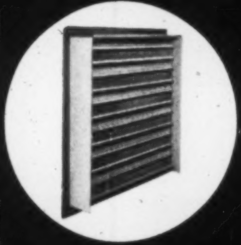


Utility blowers for exhaust duty on all commercial and industrial systems where static pressures are encountered, 4" through 11" sizes, 170 cfm—2,300 cfm.

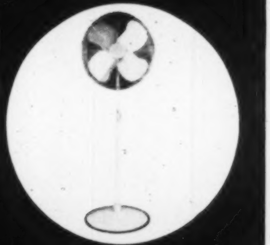


Belt drive units for indoor or outdoor service on systems where static pressures up to 2" are encountered, forward or backward curved wheels—9" through 36", 600 cfm—26,600 cfm.

LOUVERS AND AIR CIRCULATORS



Wall louvers for use with wall mounted propeller fans. Single vane construction with felt edging. 10" through 72" sizes.



Air circulators for general air circulation in commercial establishments, offices, factories. 24" and 30" sizes, wall, ceiling, counter, pedestal mounting.

These 5 Important Reasons Prove You're Right To Choose

Power Line

For Your Ventilation Requirements.

1. **Complete Line.**
2. **Certified Performance.**
3. **37 Years of Specialization.**
4. **Competitively Priced.**
5. **Sold Only Through Ventilation Specialists.**

Just a few of the hundreds of Power Line models and sizes are shown here. In addition to standard models, we produce specially designed equipment to meet your exact requirement.

Which Of These Air Movement Problems Do You Want Solved?

Heat and dust
General ventilation
Fumes and steam
Comfort cooling
Air circulation
System air movement
Cooking odors
Spot cooling
Paint spray booth
Temperature equalization

A precisely right Power Line product solves these and every other ventilating problem.

SEE US AT BOOTH 637

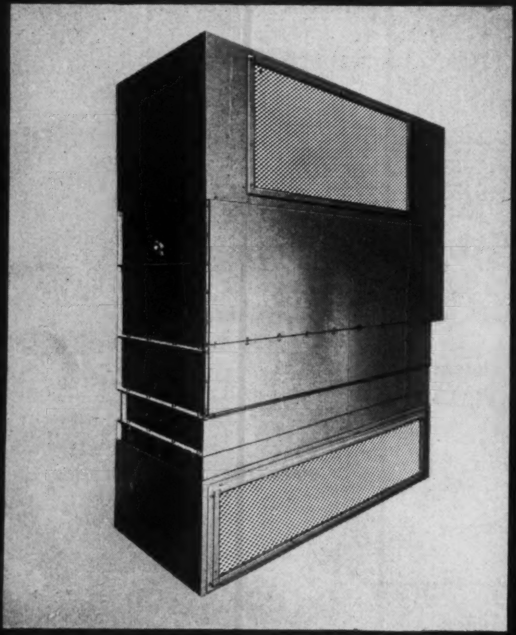
15th International Heating and
Air Conditioning Exposition
Chicago February 13-16

Selected Sales Territories Available

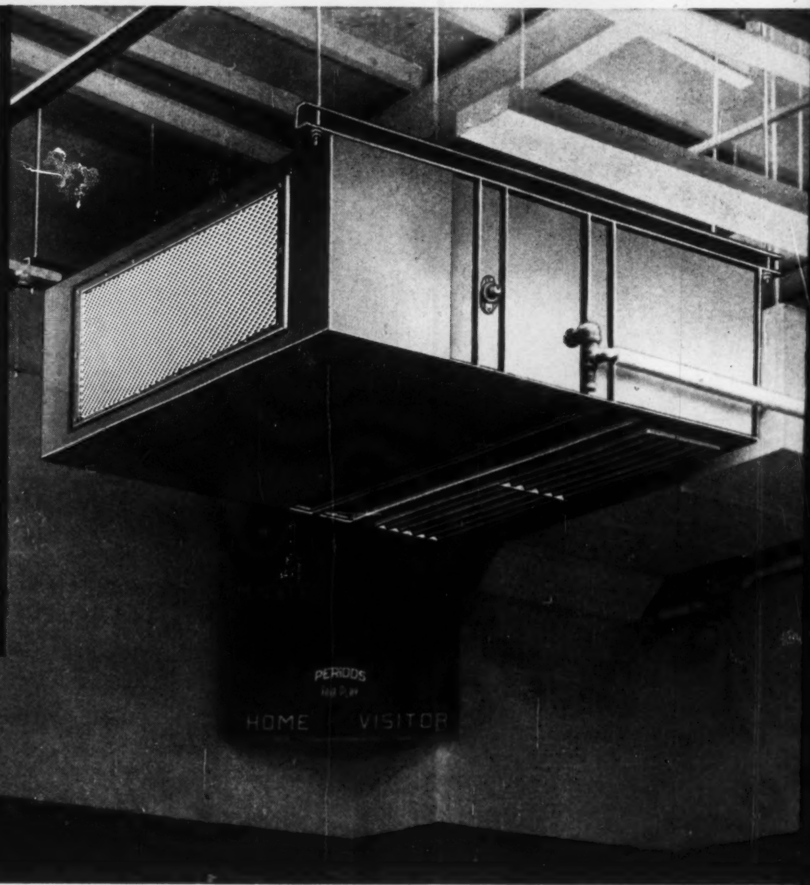
Power Line

POWER LINE FAN COMPANY
DIVISION OF CHELSEA PRODUCTS
PLAINFIELD, NEW JERSEY

Now—17 Trane Torrivent large area heating-



Two-fan unit. Vertical floor-mounted or wall-hung unit with de luxe discharge plenum and intake box.



New Auditorium Torrivent (*horizontal*). Used in factories, auditoriums, convention halls, gyms, etc. Extremely quiet, economical to operate.

Expanded size range lets you choose a unit that fits your job exactly

Now from the TRANE Torrivent line you can select the capacity you need to meet the requirements of any large interior space. Thorough testing and rating of the Torrivent as a unit assures accurate capacity ratings.

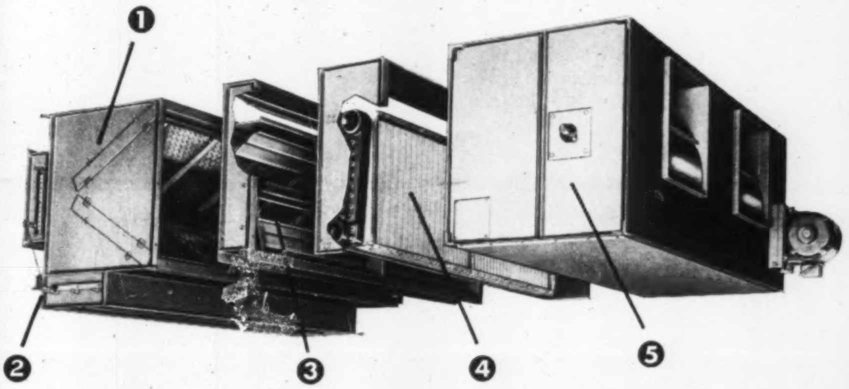
Versatile line. Seventeen Torrivent sizes give you a selection of heating capacities that range from 20,000 to 3,800,000 Btu. Choice of six models—vertical floor; horizontal ceiling; inverted ceiling; horizontal floor; vertical wall; inverted wall—with one to three fan units delivering from 600 to 54,000 cfm.

Sectionalized construction. You get the benefit of sectionalized construction that permits flexible use of any of the matched components and accessories. This is why Torrivent is a highly flexible line—adaptable for more applications.

Exclusive coil design. New TRANE NS Steam Distributing Coil with exclusive Kinetic Orifices and 1″ OD tubes assures even temperature distribution across entire coil face.

Find out more. Ask your nearby TRANE sales office for complete facts on the Torrivent line. Or write TRANE, La Crosse, Wisconsin.

sizes to solve more ventilating problems!



① **Combination filter-mixing box.** Mixing box damper blades set to direct two streams of entering air on a merging course—reduces stratification. All air is thoroughly filtered.

② **Ball-joint damper linkage.** Nonbinding, prelubricated ball-joint damper linkage is used on all face-and-bypass and mixing box sections. Absorbs minor misalignment and stress. Requires little maintenance.

③ **Face-and-bypass dampers.** Internal face-and-bypass section uses opposed blade dampers for accurate temperature control. Blades are locked securely and permanently positioned on splined rods which rotate on rustproof, permanently-lubricated nylon bushings. Moving from fully closed to fully open, relative position of blades will not vary.

④ **Heating coil.** New TRANE Sigma-Flo Coil assures greater effectiveness in heat transfer. Turbulent action on fin surface prevents buildup of any insulating film of air. Steam distributing coil design with 1″ OD tubes virtually eliminates condensate bridging—protects against freeze-up. One row of tubes meets most capacity requirements.

⑤ **Fan section.** Fans have low outlet velocities for smooth operation. Every fan section balanced electronically after complete assembly—assures efficient, quiet operation.

Torrivent design assures lower operation and maintenance costs

Low operating cost. Torrivent fans, manufactured by TRANE, have an advanced design that assures peak operating efficiency. Fan horsepower requirements are kept low for economical operation. TRANE also offers a wide selection of sizes and unit combinations—so you don't pay for operating unneeded capacity.

Low maintenance cost. All coils are removable and accessible. Coils are pitched in every unit to give complete drainage.

Ball bearings are lubricated for life. Reduces maintenance—eliminates danger of improper lubrication. Bearings selected for a service factor of 3.

Rugged construction. Casing and accessories are uniframe construction, with heavy gauge phosphatized steel. Coils have heavy semi-steel cast headers with tubes rolled and bushed for longer life.

See the TRANE Torrivent at the
ASHRAE Show Chicago, February 13-16
BOOTH 3 and 7

For any air condition, turn to

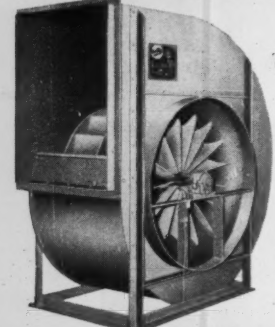
TRANE

MANUFACTURING ENGINEERS OF AIR CONDITIONING,
HEATING, VENTILATING AND HEAT TRANSFER EQUIPMENT

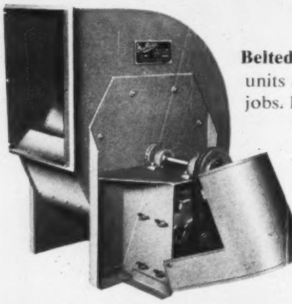
THE TRANE COMPANY, LA CROSSE, WIS. • SCRANTON MFG. DIV., SCRANTON, PA. • CLARKSVILLE MFG. DIV., CLARKSVILLE, TENN. • TRANE COMPANY OF CANADA, LIMITED, TORONTO
100 U. S. AND 19 CANADIAN OFFICES

BUFFALO FORGE COMPANY AND

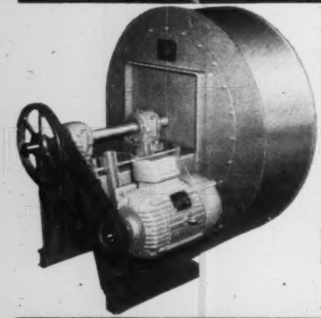
BUFFALO, NEW YORK • AIR HANDLING DIVISION



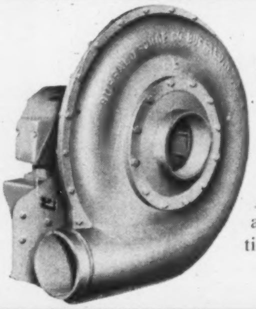
Types BL & BLH Limit Load Fans. Efficient, quiet operating fans for ventilating, air conditioning and general air moving. BL for Class I or II. BLH for Class III or IV. Backward curved blades provide non-overloading characteristics. Capacities to 500,000. BL-Bulletin 104, BLH-Bulletin 201.



Belted Vent Sets. Flexible "package" units adaptable to many ventilating jobs. Low initial and operating cost. Non-overloading wheel. Speeds and capacities readily adjustable. Available with special corrosion-resistant coatings or materials. Bulletin 3720 gives full information.



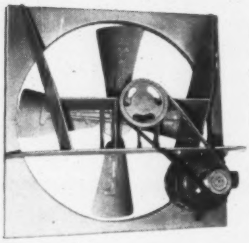
Industrial Exhausters. A line of ruggedly built, efficient material or air handling fans. Available with material wheel (MW) open material wheel (OMW) or air wheel (AW). Can be rubber lined or constructed to handle hot gases to 850°F. Bulletin FI-110.



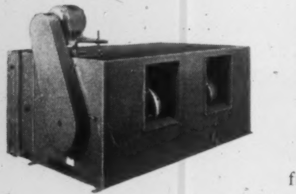
E Blowers. Small economical units for combustion air, chip removal, dust removal, cupola work, etc. Widely used in original equipment field. Drive direct connected. Constant or variable speed. Special wheels are obtainable as well as flanged inlets or outlets. Bulletin FI-410.

FOR PROMPT, COURTEOUS SERVICE CONTACT YOUR BUFFALO ENGINEERING REPRESENTATIVE

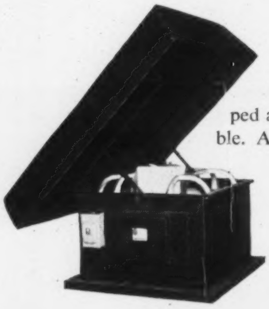
Vaneaxial Fans. Widely used for hood exhaust, as booster fans and other duct mounted installations. High efficiencies for static pressures of ¼" to 3". Compact, sturdy, light weight design. Bulletin 3533.



Package Propeller Fans. Most complete line of high capacity propeller fans. Shipped completely assembled with motor and V-belt drive on rugged, square-flanged panels for easy installation. Capacities to 250,000 cfm. All accessories available. Bulletin FM-315.

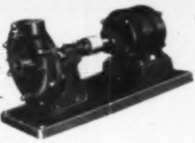


Air Conditioning, Heating and Ventilating Units. Buffalo offers a complete line of air conditioning, heating and ventilating cabinets and air cleaning equipment. Units are available to handle all or any functions. The complete line is modern in engineering and construction. Write for details on the units designed to meet your requirements.

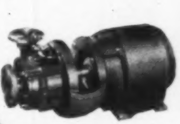


Power Roof Ventilators and Make Up Air Units. Buffalo 'Sky Vent' Package Power Roof Ventilators are shipped as a complete unit ready to assemble. All accessories including dampers, filters, heating and cooling coils and special coatings are available. **Make-Up Air Units** supply heated or cooled air to plant areas requiring replacement of exhausted air. Bulletin FM 2345.

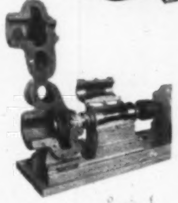
BUFFALO PUMPS DIVISION BUFFALO FORGE COMPANY



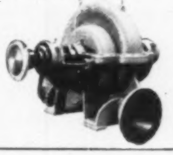
Single Suction — Single Stage. Moderate priced for general service, brine and air conditioning installations. Capacities 10 to 500 gpm. Head 10 to 20 ft. Bulletin 965.



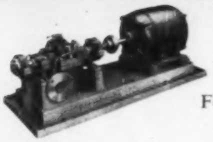
Single Suction Close-Coupled. For average industrial installations. Space saving design. Impeller overhung on motor shaft. Available in special alloys. Bulletin 975.



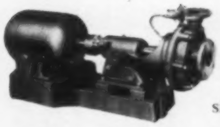
Single Suction Rubber-Lined. Long pump life handling corrosives. Rubber permanently bonded to all wetted surfaces. Capacities to 7000 gpm. Bulletin 981.



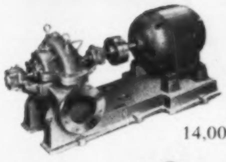
Double Suction Rubber-Lined. Handle corrosives at high efficiency, high volume. Completely rubber-lined. Diagonally split shell for fast inspection. Bulletin 981.



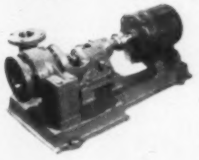
Single Suction Multi-Stage. Made in two and four stage. Head 60 to 1500 feet. Capacity 20 to 900 gpm. For clear water service. Bulletin 980.



Single Suction, Full Ball Bearing. Parts are standarized and interchangeable. Wide application handling corrosive and non-corrosive liquids. Bulletin 976.



Double Suction. For top efficiency on most all clear water installations. Horizontal and vertical models. Casing diagonally split for easy inspection. Capacities to 14,000 gpm. Heads to 400'. Bulletin 955.



High Temperature Pumps. Designed for handling high temperature liquids. Water cooled bearings and stuffing boxes. Smothering gland. Mechanical seals available. Details on request.

Albany 4, N. Y.
R. B. Taylor
966 Broadway

Albuquerque, N. M.
Hugh Munn
P. O. Box 131

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Bert W. Whitman
1436 Hamilton St.

Atlanta 3, Georgia
J. W. Rockwell
305 Techwood Dr., N. W.

Austin, Texas
Langhammer-Rummel Co.
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P. O. Box 3418
S. Austin Station

Baltimore 18, Maryland
D. M. Robinson
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J. H. Judd
P. O. Box 7614

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Buffalo 5, New York
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Chicago 6, Illinois
Johnson & Heckel
20 N. Wacker Dr.

Cincinnati 9, Ohio
J. W. Gibbs
3047 Madison Rd.

Cleveland 15, Ohio
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Columbus 12, Ohio
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937 Architects &
Builders Bldg.

Jacksonville, Florida
H. L. McMurry Co.
P. O. Box 2548

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V. F. W. Bldg.,
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Knoxville 2, Tennessee
C. F. Sexton
702 Empire Bldg.
P.O. Box 2224

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J. L. Brown
217 Terminal Whse., Bldg.

Los Angeles 17, California
Halladay & Knauff
1127 Wilshire Blvd.

Louisville 2, Kentucky
H. M. Lutes
633 South Fifth St.

Memphis 6, Tennessee
Process & Power, Inc.
1565 Harbor Ave.
P.O. Box 10138

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Ousley & Associates
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744 North 4th St.

Minneapolis 2, Minnesota
E. Floyd Bell
2102 Foshay Tower

Nashville 4, Tennessee
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726 16th Ave. South

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New York 17, New York
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604 Central Ave.

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Process Equipment Co.
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Omaha 2. Nebraska
Wain Engineering Co.
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3318 West Cary St.

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E. M. Cahill
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1118 Madison Ave.

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BUFFALO FORGE COMPANY
Buffalo, New York
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'Buffalo' Air Handling Equipment to move, heat, cool, dehumidify and clean air and other gases.

'Buffalo' Machine Tools to drill, punch, shear, bend, slit, notch and cope for production or plant maintenance.

'Buffalo' Centrifugal Pumps to handle most liquids and slurries under a variety of conditions.

Squier Machinery to process sugar cane, coffee and rice. Special processing machinery for chemicals.

LENNOX

A Single Source for Heating, Ventilating, Air Conditioning in Business, Industry and Schools

PROBLEM: TO PROVIDE YEAR 'ROUND COMFORT FOR 12 DIFFERENT ZONES IN A 40,000 SQ. FT. LIBRARY

Lennox solution: Ten Lennox LANDMARK® units provide individually controlled heating and cooling for each zone. The main floor, with six rooms, is supplied a total of 23,300 CFM and 60½-tons cooling. Four mezzanine rooms are served by three 10-ton LANDMARK® units. The basement area utilizes the same equipment used on the 1st floor and mezzanine. Air-cooled condenser-compressor units are located on concrete pads outside the central equipment room.

Now, Lennox offers you a complete line of warm air heating and air conditioning equipment . . . all from *one central source.* Huge-capacity industrial heaters with up to 2,000,000 Btuh capacities . . . unit and duct heaters . . . COMFORT CURTAIN® systems for schools . . . air conditioning equipment for every size job . . . all designed, tested and manufactured in our own factories. You deal with one company, represented by one man. He's a professional heating and air conditioning technician, ready to become a part of your team. He'll relieve you of bothersome details and red tape, and make sure you have the right equipment on the job, when you need it. For more complete information on the Lennox line of heating and air conditioning equipment, write LENNOX, 800 S. 12th Ave., Marshalltown, Iowa, or phone your nearest Lennox office listed on the facing page and ask a technical representative to call.

PROBLEM: RAISE THE TEMPERATURE OF CRUDE RUBBER STORED IN BOXCARS, FROM OUTSIDE TEMPERATURES TO 120° F.

Lennox solution: 500,000 Btuh unit heaters are connected by canvas ducts to incoming boxcars loaded with crude rubber. When the load is heated, the canvas ducts are easily disconnected and another boxcar is brought into position. The Lennox units are designed to provide the high discharge air temperatures required for this type of process without affecting their efficiency and long life. Lennox direct-fired heaters, ranging in capacities up to 2,000,000 Btuh, are used extensively in industry for heating, cooling, ventilating, make-up air and process application.

PROBLEM: HEAT, FRESH-AIR COOL AND VENTILATE A 12-CLASSROOM SCHOOL FOR LESS THAN $1.25 PER SQ. FT.

Lennox solution: A Lennox COMFORT CURTAIN® system that provides individual room-controlled fresh-air, cooling, ventilating and heating installed for only $1.07 per sq. ft. Gas fired heating sources, in approved construction heater rooms, are located on exterior walls between each two classrooms. An air processing unit in each room meters precise amounts of fresh, heated or return air through functional bookshelf duct sections across the full length of each classroom exterior wall. Minimum structural requirements and ease of installation reduced both initial cost and over-all expenditures.

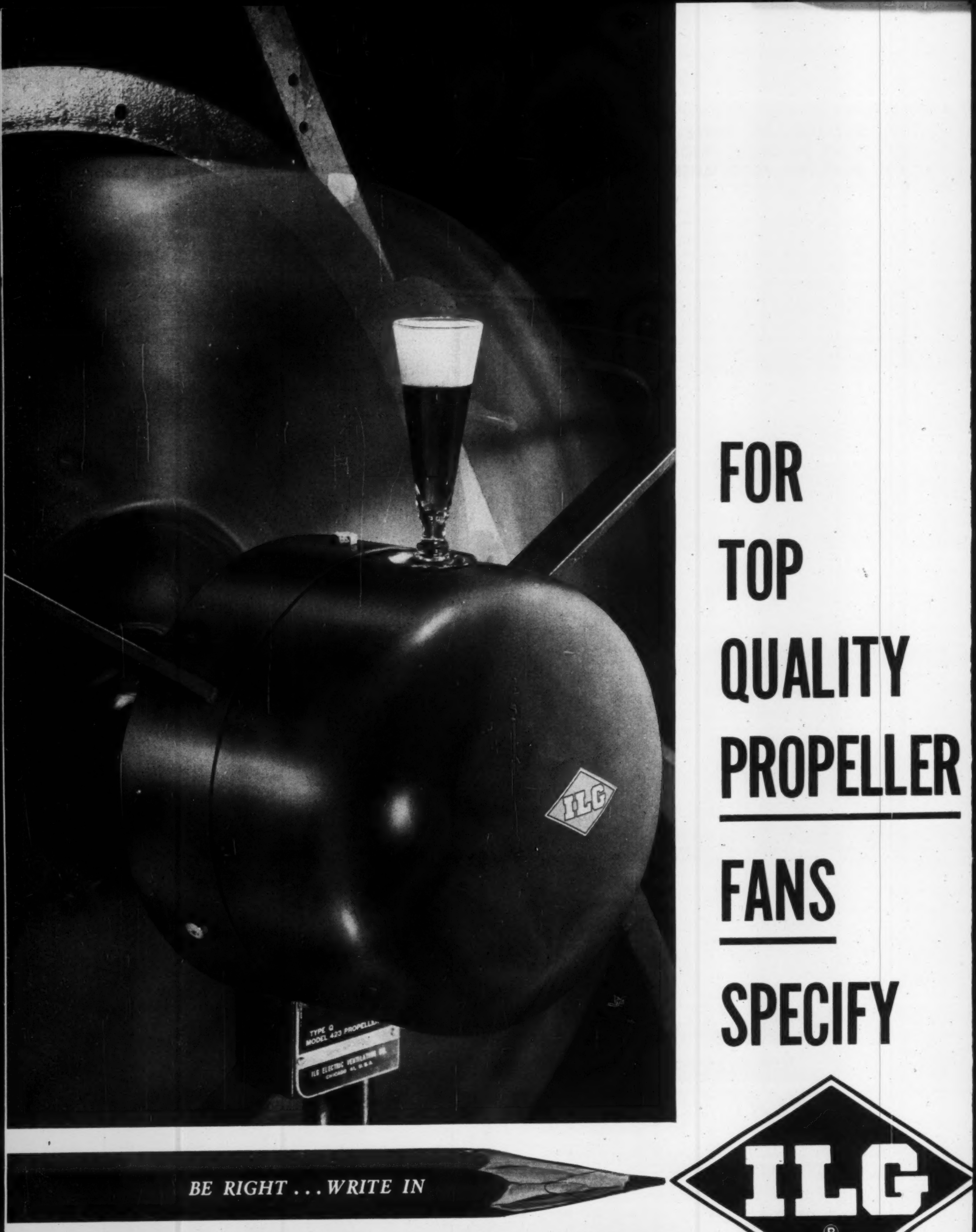
Don't be satisfied with less than

LENNOX®

HEATING · AIR CONDITIONING

IN HOMES | IN CHURCHES | IN SCHOOLS | IN BUSINESS | IN INDUSTRY

LENNOX INDUSTRIES INC., FOUNDED 1895 — MARSHALLTOWN AND DES MOINES, IOWA; COLUMBUS, OHIO; SYRACUSE, NEW YORK; DECATUR, GEORGIA; FT. WORTH, TEXAS; SALT LAKE CITY, UTAH; LOS ANGELES, CALIFORNIA. LENNOX INDUSTRIES (CANADA) LTD. — TORONTO, MONTREAL, CALGARY, VANCOUVER, WINNIPEG.


TYPE Q
MODEL 423 PROPELLER
ILG ELECTRIC VENTILATION CO.
CHICAGO 41, U.S.A.
ILG
FOR
TOP
QUALITY
PROPELLER
FANS
SPECIFY
BE RIGHT . . . WRITE IN
ILG
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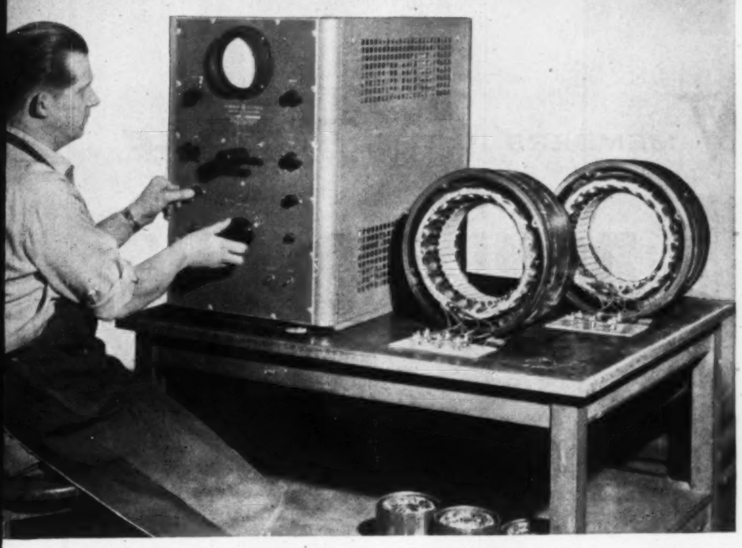
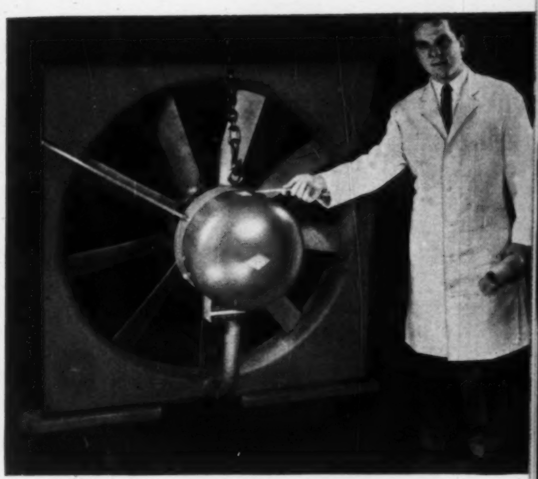


No Weak Windings. All windings in Ilg-built motor cores undergo turn-to-turn voltage torture tests to spot any winding insulation weakness. Moisture cannot affect cores since patented process assures uniform impregnation of motor windings.



New Propeller Fan Design. Ilg square panel propeller fans offer choice of three sizes (36-, 42- and 48-inch), two types of fan wheels (airfoil-design blades for higher static pressure or patented "Q" blades for super-silent operation). Motors are self-cooled, direct-connected.

Put a Pilsner on an Ilg propeller fan, as shown. Flip the starting switch. Now check the results with your own eyes.

Any bubbles in the beer? None. Here's why: Ilg direct-connected, self-cooled fans run so vibration-free it's like placing the Pilsner on a table.

You *eliminate* vibration, noise, maintenance when you ventilate with Ilg fans. Careful dynamic balancing of all component parts . . . and electronic checks of Ilg-built motors and patented Type "Q" fan wheels, *before* and *after* assembly . . . make certain that smooth, silent, maintenance-free operation is as much a part of each propeller fan as the Ilg "One-Name-Plate" pledge of performance.

For further information, write for Propeller Fan Catalog DB1-100.

Follow the Flame for an easy-to-see demonstration of how vent pipe sucks in outside air to *pressure-cool* permanently lubricated Ilg-built motors. This famous Ilg self-cooling feature provides the protection of motor enclosure with the operating economy of an open motor. Ilg motors run cool, stay clean *inside and out.*

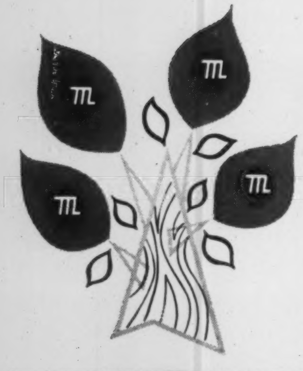
Pledge of Performance. This Ilg diamond trade-mark tells you that Ilg-built fan wheels, frames and motors combine modern design, careful craftsmanship, quality manufacture —your assurance of maintenance-free performance.

ILG ELECTRIC VENTILATING CO.

2826 No. Pulaski Road, Chicago 41, Ill.
Offices in 60 Principal Cities
Member of Air Moving and Conditioning Association, Inc. (AMCA)

CERTIFIED RATINGS
AUTHORIZED BY
AMCA

Each Ilg product shown carries the rating seal of the Air Moving and Conditioning Association, Inc.



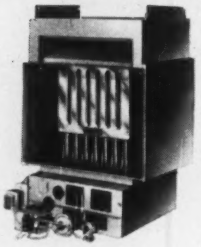
NEW MEMBERS IN THE Modine

15 new reasons

WORLD'S MOST COMPLETE UNIT HEATER PACKAGE

NEW

ELECTRIC UNITS — as dependable as your electric power source! Seven sizes — 17,065 to 85,325 Btu. Catalog 1060.

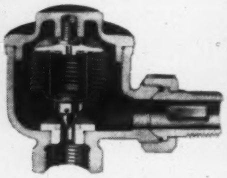


NEW

GAS-FIRED DUCT FURNACES — now AGA-approved for installation *downstream* from refrigeration systems. Six sizes — 75,000- to 300,000-Btu/hr input. Catalog 659B.

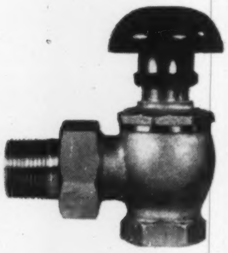
A COMPLETE NEW STEAM SPECIALTIES PACKAGE

DRIP TRAPS



THERMOSTATIC TRAPS

STRAINERS



RADIATOR SUPPLY VALVES

A COMPLETE RADIATION PACKAGE

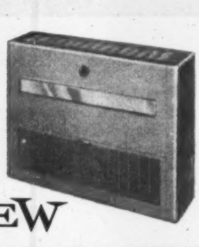
NEW

BASEBOARD HEATING — for steam and hot water. Perimeter heating at its best. Two sizes — 9½″ and 11¾″ high. For full details see Bulletin 360.

A COMPLETE ROOM AIRDITIONER PACKAGE

NEW

LOW-BOY AIRDITIONERS®—14½″ low, utilize central-source chilled water for cooling and steam or hot water for heating. Amazingly compact and quiet. Four sizes. Bulletin 760-B. Also other models: Bulletin 757.

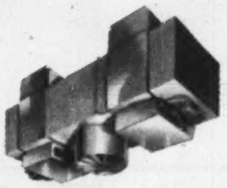


NEW

SELF-CONTAINED AIRDITIONERS — heat with steam, hot water from a central source or with electricity. Cool with self-contained refrigeration unit. Four models. Bulletin 760.

FAMILY OF QUALITY PRODUCTS ADD UP TO . . .

for specifying Modine



NEW

GAS-FIRED, INDUSTRIAL-TYPE, VERTICAL-DELIVERY UNITS — solve difficult heating problems in large commercial and industrial buildings. Three sizes — 300,000- to 600,000-Btu/hr input. Catalog 660.

Other Modine unit heaters:

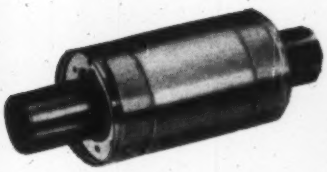
Steam and Hot Water Units — horizontal, vertical and Power-Throw types . . . wide range of sizes. Catalog 159.

Steam and Hot Water Blower Units — for large-volume air-handling applications. Five types, eight models. From 600 to 33,000 cfm. Bulletin 858.

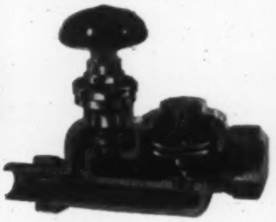
Gas-Fired Propeller Units — attractive, lightweight. Stainless steel burners. Eight sizes — 25,000 to 310,000 Btu. Catalog GU660.

Gas-Fired Blower Units — for heating and ventilating. Seven models from 50,000 to 310,000 Btu. Catalog GB660.

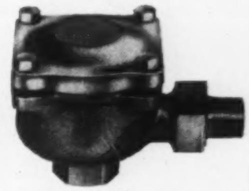
LIFT FITTINGS



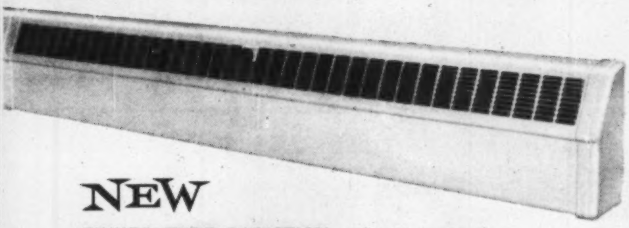
EXPANSION JOINTS



DOUBLE-SERVICE VALVES



PROCESS STEAM TRAPS



NEW

FINNED TUBE RADIATION — for steam and hot water. Simplified design speeds installation, reduces cost. Two enclosure styles. Full details given in Bulletin 460.

Other Modine radiation units:

Standard Convectors — 30 types and 8,000 sizes. Choice of standard and heavy-gauge enclosures. Catalog 257.

Cabinet Units — eight enclosure types — 120 to 640 Edr. Catalog 557.

Heating and Ventilating Units — in five types, eight models . . . in sizes from 600 to 33,000 cfm. Bulletin 858.

Perma-Trim Wall-to-Wall Convectors — in two types; offer the finest in convector comfort. Full facts in Bulletin 259-A.

UR-1423A

Expansion program greatly increases Modine's application range

With the array of fine new products above, Modine is better qualified than ever to fill the year-round comfort requirements of industrial, commercial, institutional and residential buildings. And every product meets Modine's well-known high standards of design, construction and performance excellence. Through long years of experience, Modine has found that strict adherence to these quality standards is the *only* way to achieve *complete customer satisfaction.*

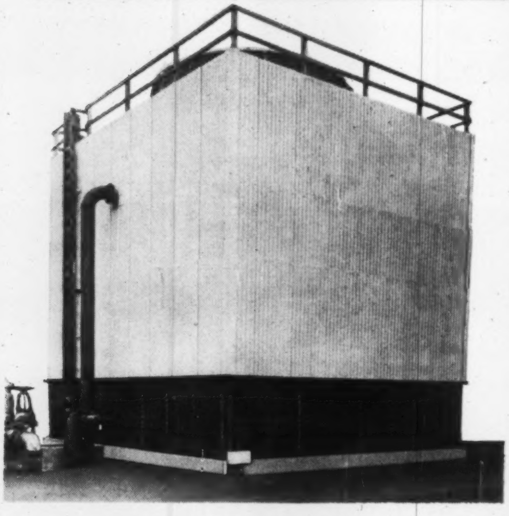
Note the bulletin numbers of products you're interested in and contact your nearest Modine representative . . . he's listed in the yellow pages. Or write Modine Manufacturing Co., 1509 DeKoven Ave., Racine, Wis.

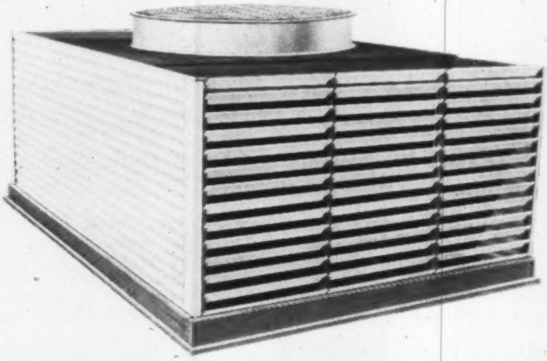
Modine®
MANUFACTURING COMPANY
In Canada: Sarco Canada, Ltd., Toronto 8, Ontario

YOUR GUIDE TO GREATER FLEXIBILITY IN COOLING TOWER DESIGN

NEW

Phillips



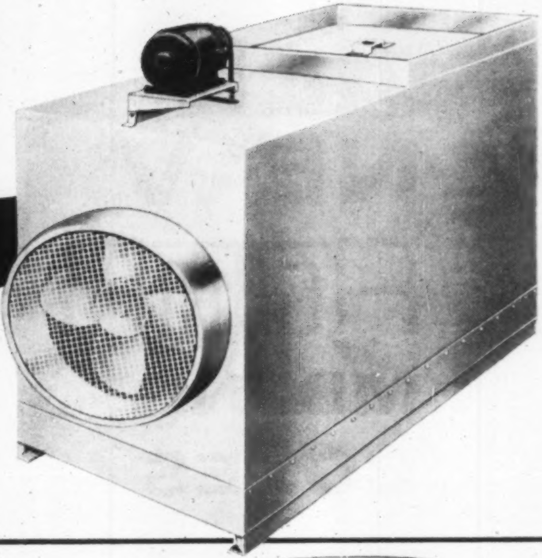


No one design solves all cooling tower problems—but the complete PHILLIPS line does. No matter what the specifications, you'll find the answer in PHILLIPS Custom Engineered Cooling Towers.

Put PHILLIPS . . . the cooling tower specialists with unrivaled experience to work on your next job. You'll like the results.

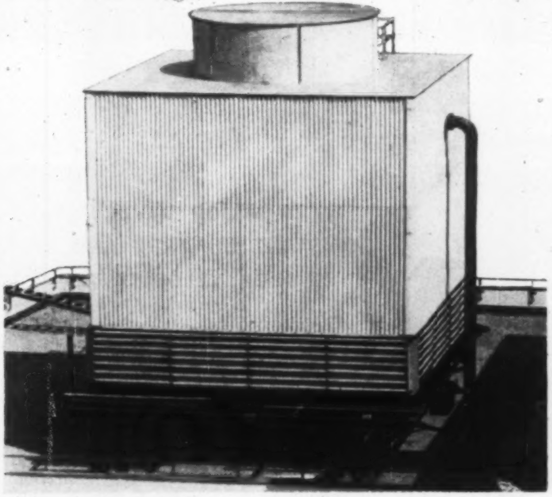
Write for Complete Literature

Phillips
Cooling Tower Co., Inc.
220 DUPONT ST., BROOKLYN 22, N. Y.



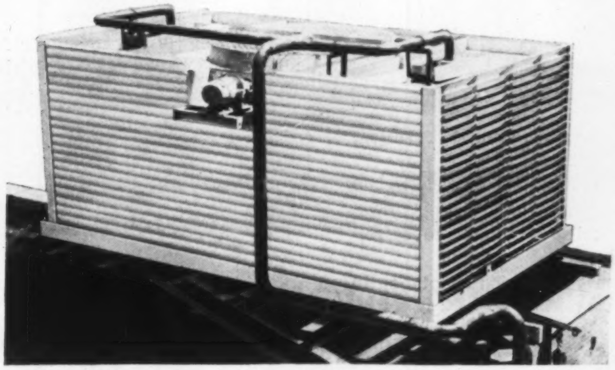
PACKAGED STEEL COOLING TOWER

A hot dipped galvanized steel packaged cooling tower with capacities from 3 to 60 tons, incorporating all the excellent engineering features as found in Phillips larger models. Available for delivery this cooling season.



COUNTERFLOW

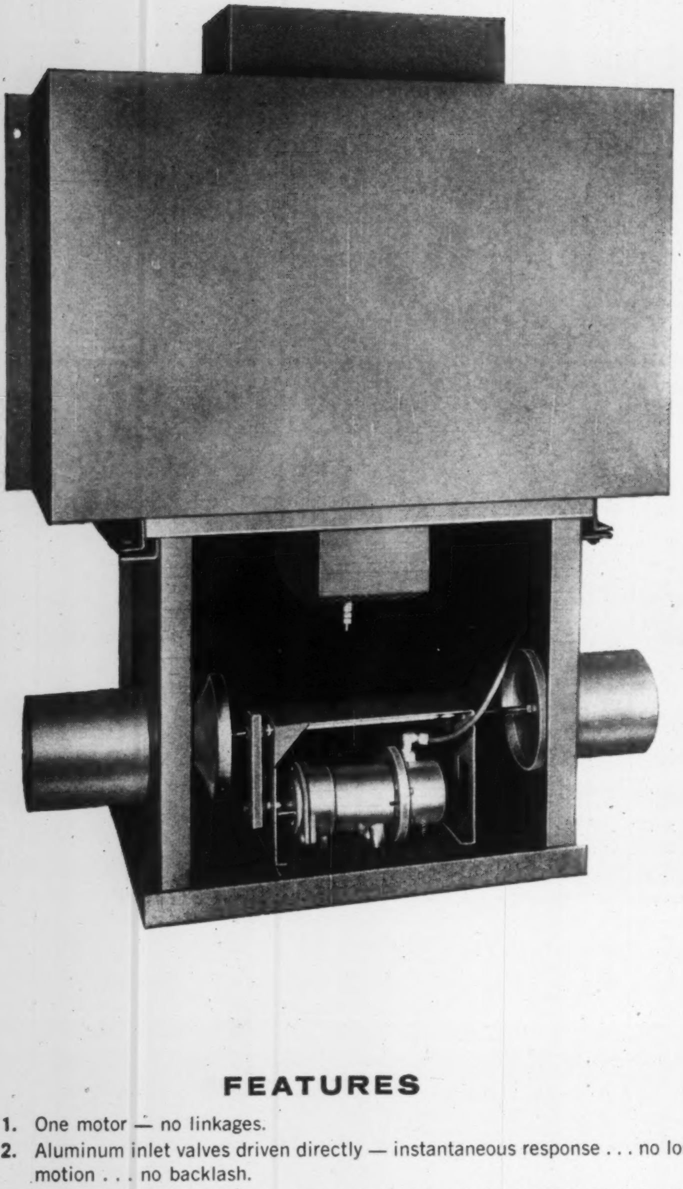
Offers a custom engineered tower to meet any space condition. Proven design offers maximum capacity for minimum expense.



DUAL AIRSTREAM

Phillips Cooling Tower Company continues to manufacture its dependable low height design, obtaining maximum performance from minimum height.

ALL NEW AGITAIR® MIXING BOXES



A MAJOR DEVELOPMENT IN CONSTANT CONTROL AND DISTRIBUTION OF HIGH VELOCITY TEMPERED AIR

A simple design of the all new AGITAIR Type "O" series, high velocity mixing boxes eliminates all troublesome linkages and pivots. Only one motor is employed to operate the inlet valves which are driven directly, guaranteeing instantaneous response with no lost motion or backlash.

The mixing valves proportion the hot and cold air in response to the room thermostat and the unique AGITROL volume regulator guarantees constant control of air delivery at the required volume.

Comprehensive noise attenuation tests were conducted to assure extremely low sound ratings for ceiling and under the window units. And for noiseless, draftless distribution of the conditioned air from these units, there is a complete line of AGITAIR diffusers and grilles from which to choose.

Technical catalog HV-100 contains complete performance data and dimensions on all AGITAIR units. Write for your copy today.

FEATURES

1. One motor — no linkages.
2. Aluminum inlet valves driven directly — instantaneous response . . . no lost motion . . . no backlash.
3. Unique AGITROL valve (constant volume regulator) actuated solely by the supply air.
4. Both mixing and attenuation chambers fabricated of galvanized or galvannealed steel . . . sealed to prevent air leakage.
5. Split fabrication of attenuation chamber permits dimension adaptation to meet most space limitations.

AIR DEVICES INC.
185 MADISON AVENUE • NEW YORK 16, N. Y.

BETTER PRODUCTS FOR
AIR DISTRIBUTION • AIR CLEANING • AIR EXHAUST

G-100-4

The Complete Line...

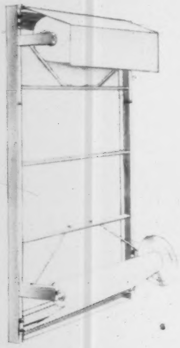
FARR

AIR FILTERING EQUIPMENT *for air-conditioning, ventilating and heating systems in commercial and industrial applications*

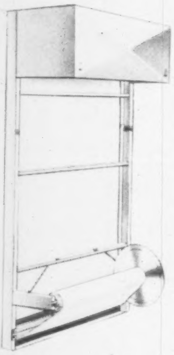
FARR *the complete filter line for every air-filtering requirement*

AUTOMATIC FILTERING EQUIPMENT

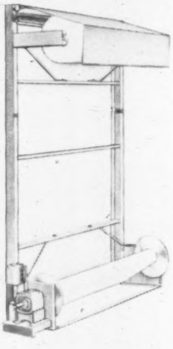
Farr **V-7 ROLL-KLEEN** *air filter*
Glass fiber filter media unwinds from a supply roll at the top of the filter and is rewound manually or automatically on a bottom roller. Media supply on one roll lasts up to a year. Filter rolls are disposable. Sizes will meet any CFM requirements. Recommended where frequent maintenance is inconvenient.



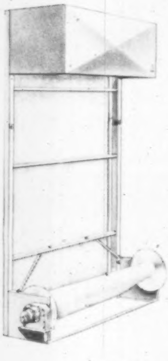
V-7A—Manual Open Top (Hand operated media advance, metal and rubberized fabric media shield).



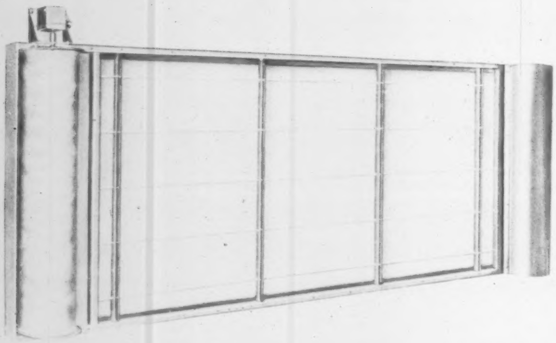
V-7B—Manual Closed Top (Hand operated media advance, metal enclosed top protects media).



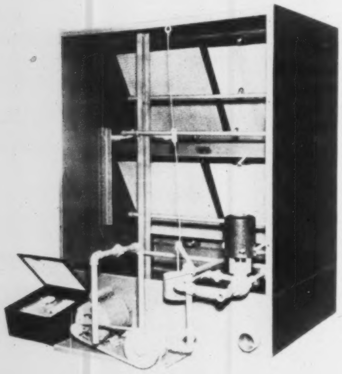
V-7C—Automatic Open Top (Automatic media advance, metal and rubberized fabric shield).



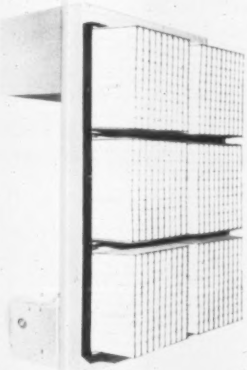
V-7D—Automatic Closed Top (Automatic media advance, metal enclosed top for media protection).



Farr **TYPE H-5 ROLL-KLEEN** *air filter*. Type H-5 Roll-Kleen is similar in operation to the V-7 but is built for horizontal installations. The filter media feeds from a supply roll automatically (or manually if preferred). Pressure switches control the media-changing operation, keeping efficiency high, maintenance low. Filter rolls are disposable.

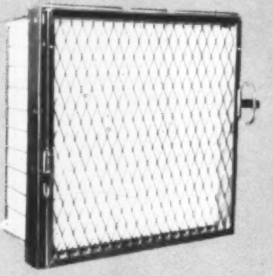


Farr **SELF-WASHING** *filter*. Automatically spray-washes permanent filter panels and re-oils them, eliminating periodic servicing. Contamination and dirt are flushed down the drain. An electric timer controls the cycle. Available in many sizes for any requirement.

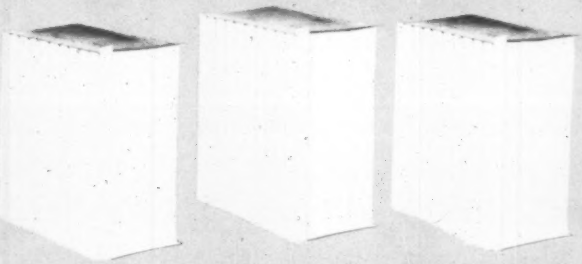


Farr **HI-KLEEN** *air filter*. This two-stage air filter consists of a Farr V-7 Roll-Kleen as the primary filter combined with a bank of HP-2 Filters as the secondary filter. All media is disposable. Combinations of Hi-Kleen sections may be bolted together to handle required capacity. Efficiency is very high.

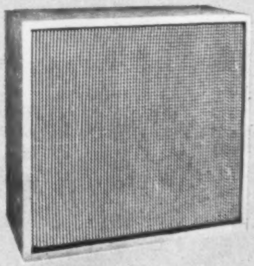
HIGH EFFICIENCY DISPOSABLE FILTERS



Farr **HP** *filters* feature a *disposable* filter cartridge that is light in weight, *deep pleated* (for greater surface exposure and dirt holding capacity), compact (are folded and packed 5 or 10 to a carton for easier handling and storage) and *flame proof* (for utmost safety). Choice of three media with efficiencies from 35% to 95% on the N.B.S. Type Test. (Atmospheric).

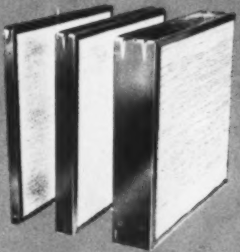


HP-200 media consists of a reinforced mat of extremely fine glass fibers and is designed for installations requiring near absolute efficiency. HP-200 filters will give high efficiency performance and long service life with or without pre-filters. HP-200 has a mean efficiency of 95% on the N.B.S. Type Test (atmospheric). **HP-100** media consists of a reinforced mat of fine glass fibers and is designed for the efficiency range of slightly less than the range of the HP-200 filter. The HP-100 has an exceptionally large dust holding capacity. The mean efficiency is 85% on the N.B.S. Type Test (atmospheric). **HP-2** media consists of a reinforced non-woven cotton fabric and is designed for installations requiring high performance filtration with minimum initial and maintenance costs. Mean efficiency is 37.5% on the N.B.S. Type Test (atmospheric).

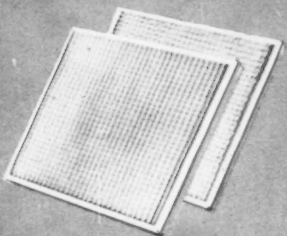


Farr **MAGNAMEDIA** *filters.* Magnamedia Filters meet AEC requirements for industrial and laboratory uses. Filtering efficiencies (up to 99.97% by D.O.P. Test). Choice of several frame materials and media combinations will withstand temperatures up to 2300°F.

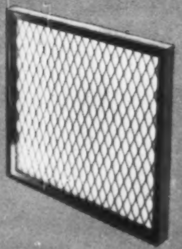
PANEL FILTERS



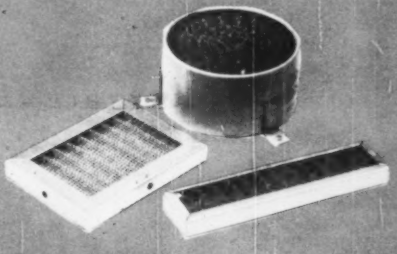
Farr **TYPE 44** *filters.* Type 44 are high-velocity impingement filters, a development originated by Farr and now a standard of the industry. Permanent, cleanable Type 44 Filters are ruggedly constructed and rod-reinforced to last the life of the system.



Farr **F/S** *filters.* The F/S Filter is an all-metal, lightweight, permanent type filter. The screen media is formed to create an extra air turbulence and is often selected for installations where air contains a high lint concentration. Performs effectively at low or high velocity. Panels are lightweight, cleanable, economical.

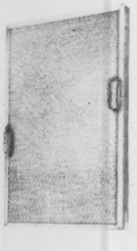


Farr **D/C** *filter.* The D/C Filter meets specifications for disposable media type panel filters. Recommended for lighter duty than Type 44 and HP Filters. The filter consists of metal frames which enclose a glass fiber pad. Available in 1" and 2" thicknesses and all sizes; low in cost and easy to service.

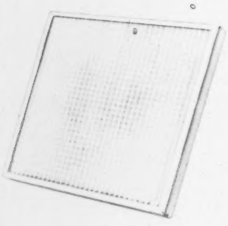


Farr **MINIATURE** *filters.* A variety of small, space saving filters for electronic cabinets where heat dissipation is achieved by ventilation. Farr miniature filters are available in a variety of materials, finishes and filter medias. Many of these filters are engineered by Farr to meet customer specifications.

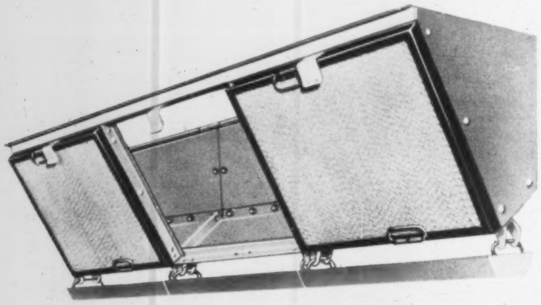
GREASE FILTERS



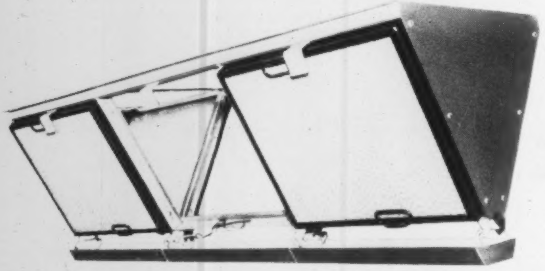
Farr **TYPE 44G** *filter* is a rugged, all metal permanent type grease filter designed to stand up under all types of heavy duty applications. The 44G filter is recommended for high velocity installations. Available in all sizes and in 1″ and 2″ thicknesses.



Farr **F/S** *grease filter* is a permanent, lightweight, all metal panel filter for commercial kitchen ventilation systems. Designed to perform well at low velocity, the F/S grease filter is available in any size. The filters are easily washed and economically priced.



Farr **GREASE ELIMINATOR** *(one-sided).* Endless grease eliminators using Farr Filters are designed for kitchen ventilating hoods mounted against the side walls. The eliminators protect kitchen exhaust systems from air-borne grease. Filters are easily removed for washing. A drip tray provides for simple removal of trapped grease. Available in stainless and mild steel.



Farr **GREASE ELIMINATOR** *(two-sided).* The endless grease eliminator is built in a V-shape to accommodate filters on both sides. Designed to install down the center of exhaust hoods. Eliminates fire hazard in air duct, is attractive, modern in design, and can be easily installed and cleaned. Available in stainless and mild steel.

Over 20 years devoted exclusively to the solution of air filtration problems is your assurance that when you install Farr equipment you are getting the finest. This outstanding filter line has long been known for its quality, efficiency, long service life and operating economy.

There is a Farr Filter for every use, from economy types to units which give the ultimate in high efficiency. Shown here on these pages are representative types in the Farr line. Most of these filters are available in a wide choice of materials and finishes.

Farr field engineers are located throughout the country to give you immediate assistance in properly solving your particular air filtration problems.

Remember, Farr is better because it was designed that way . . . by Farr.

FARR
COMPANY

FACTORY AND
GENERAL OFFICES
LOS ANGELES 45,
CALIFORNIA

Representatives in Principal Cities

IN CANADA CONTACT: FARR COMPANY MFG. LTD., MONTREAL

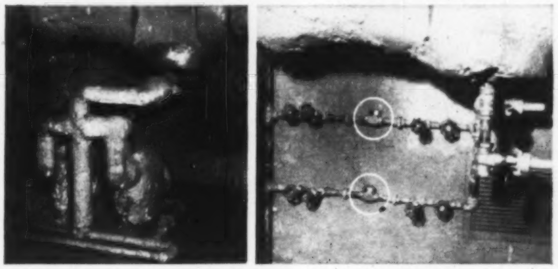
PRINTED IN USA 12 60

SARCO TOPICS

How Major New York office building solved steam trapping problems through trap standardization

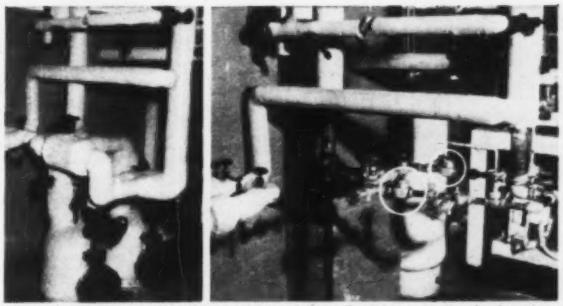
Recently, the Office Building at 625 Madison Avenue, New York, — erected in 1931 and comprising 420,000 square feet on 17 floors — discontinued its own steam generation and switched to district steam. The changeover made the inadequacies of old bucket and float traps more apparent than ever, and afforded an occasion to modernize trapping. Here's how major improvements were made.

The first problem was maintenance. All maintenance had to be done at night or on weekends, at overtime rates, because the system could not be shut down during business hours. Frequent breakdowns added to maintenance costs. After the installation of Sarco Thermo-Dynamic Steam Traps, Type TD-50, trap maintenance — and therefore maintenance costs — have been reduced almost to zero. The engine room crew are now free for other jobs, and savings in both regular and overtime manhours are considerable.


Left picture shows the steam service main from the street, with massive float trap installation. Picture at the right is view of installation after the changeover to TD-50's (circled).

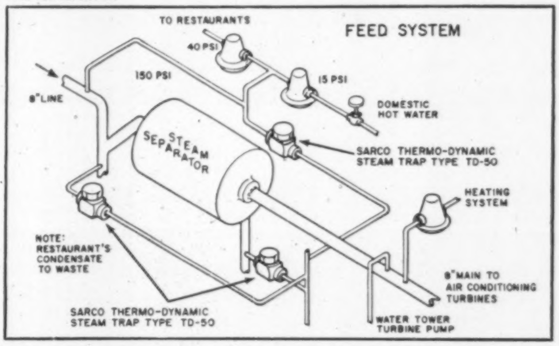
The second problem was water-hammer, caused by passage of live steam into return lines when traps failed open. (When traps failed closed, water accumulated in steam supply mains and equipment.) Installation of TD-50 steam traps ended waterhammer and consequent damage to equipment, because the TD-50 discharges condensate as rapidly as it is formed and prevents steam from entering the return system.

The third problem was live steam loss. Live steam, discharged into the return lines, not only represented a great waste of heat energy, but caused waterhammer in the return, and raised the condensate temperature to an excessive level. (Incidentally, although the building's district steam system is, of course, not faced with this problem, hot condensate passing through condensate pumps can damage pump seals.) These problems are eliminated through the use of TD-50's. No steam can be blown into the return main because the TD-50 shuts off *positively*, blocking any possibility of live steam being discharged into the return. Savings are considerable.


View at left shows original installation of huge float traps in the feed system of the building. View at the right shows compact installation of Sarco TD-50 Steam Traps (circled).

These benefits were achieved by replacing bucket and float traps with Sarco Thermo-Dynamic Steam Traps, Type TD-50, matched and correctly sized to the application. For example, many ½" bucket traps were replaced with ⅜" TD-50's, which have ample capacity for the job.

The TD-50's pressure range of 10-600 psi made it possible to standardize on one steam trap for a variety of applications that formerly required traps of many different types and pressure ratings. Finally, changeover took only 30 minutes per trap for each compact TD-50 installation.


FEED SYSTEM
TO RESTAURANTS
40 PSI
150 PSI
15 PSI
8" LINE
DOMESTIC HOT WATER
STEAM SEPARATOR
SARCO THERMO-DYNAMIC STEAM TRAP TYPE TD-50
HEATING SYSTEM
NOTE: RESTAURANT'S CONDENSATE TO WASTE
8" MAIN TO AIR CONDITIONING TURBINES
SARCO THERMO-DYNAMIC STEAM TRAP TYPE TD-50
WATER TOWER TURBINE PUMP

Schematic hook-up of the converted feed system.

The success of this TD-50 installation led Collins, Tuttle Co., Inc., managers of the building, to substitute Sarco Thermo-Dynamic Steam Traps for competitive bucket traps in two other major New York buildings.

For more information on Sarco Thermo-Dynamic Steam Traps, contact your Sarco Sales Representative or district office, or write.

2165

SARCO

SARCO COMPANY, INC.
635 MADISON AVENUE, NEW YORK 22, N. Y.
PLANT: BETHLEHEM, PA.

STEAM TRAPS • TEMPERATURE CONTROLLERS
STRAINERS • HEATING SPECIALTIES

4-WAY JOB INSURANCE

Capitol forged steel unions have built-in insurance to give 4-way trouble-free service!

(1) *Leak-proof connections* assured because Capitol unions have *more* threads, accurately cut and double-checked according to Army-Navy gauging practice. Both hand-tight and pressure-tight threads are checked, two operations instead of the one required for American Standard gauging. The extra threads mean on-the-job assurance of tight installations. (2) *Positive seating* because each union is individually pressure-tested. (3) *Clean/overall protection*, each male and female part completely phosphate coated; each nut electro-zinc plated. (4) *Easy wrenching/faster make-up* because all three parts have a definite octagon shape.

You get all 4 important advantages at no extra cost when you specify CAPITOL forged steel unions . . . one of the full-line of Army-Navy gauged forged steel fittings.

Now more than one million in service and not a single failure.

CAPITOL MANUFACTURING CO.,
Division of Harsco Corporation, Columbus, Ohio.

1

LEAK-PROOF CONNECTIONS

2

POSITIVE SEATING

3

CLEAN/OVER-ALL PROTECTION

4

EASY WRENCHING/FAST MAKE-UP

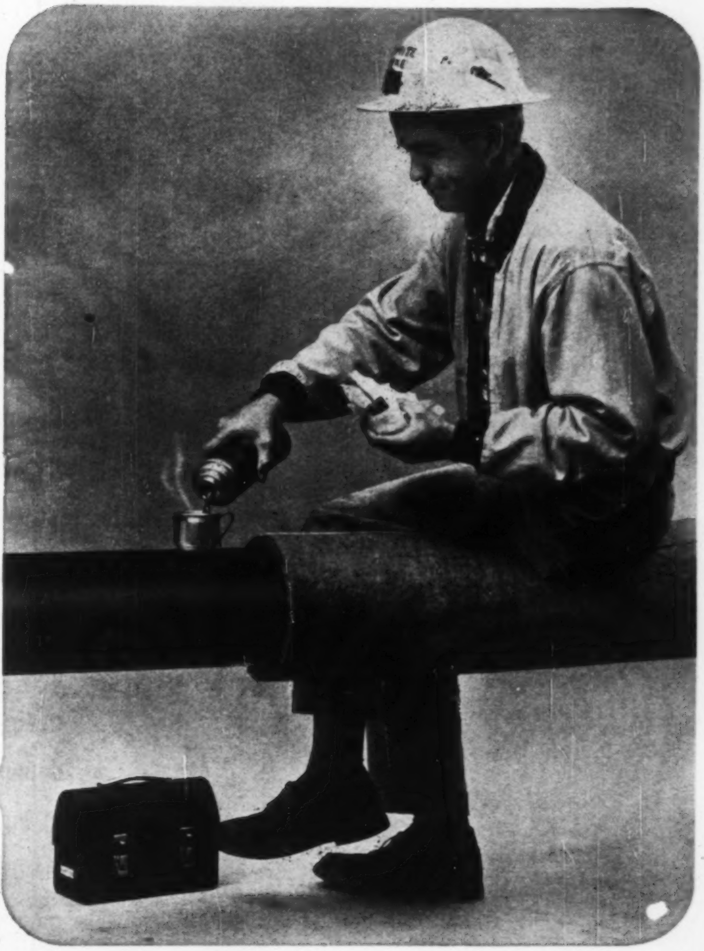
CAPITOL

SPECIFY CAP FOR ALL FITTINGS

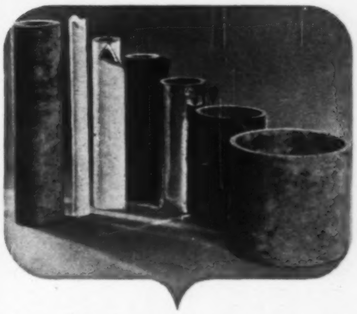
SOLD ONLY THROUGH RECOGNIZED DISTRIBUTORS

HERE'S WHY G-B SNAP*ON® GLASS FIBER PIPE INSULATION OUT-PERFORMS ALL OTHER PIPE COVERINGS

FOR CHILLED AND HEATED PIPE FROM SUB-ZERO TO 350° F.—INDOORS OR OUT—G-B SNAP*ON HAS NO SUPERIOR. AND HERE'S WHY:



HIGH IN THERMAL EFFICIENCY. A heated pipe may keep this workman's coffee hot, but it's a cinch that he won't get a "hot seat" when he's protected by G-B Snap*On. The "K" factors of this all-glass-fiber insulation are second to none among all general purpose pipe insulations.



IMMUNE TO DAMAGE. Tough to beat and tough to abuse — that's G-B Snap*On. There's just no knocking out the highly resilient glass fibers that go into the construction of G-B Snap*On. Even when accidentally crushed or stepped on, it springs back to its original shape.

EASY, FAST TO INSTALL. Thanks to its snap-hinge action, G-B Snap*On slips over pipe and snaps back to its original cylindrical shape in one easy motion. Once in place, G-B Snap*On provides permanent insulation protection. It does not rot, corrode, mildew or otherwise deteriorate.

VARIETY OF SIZES. The only one-piece glass fiber pipe insulation available in sizes over 32" IPS, G-B Snap*On is also available in diameters down to copper tubing . . . varying thicknesses . . . plain or with a variety of factory-applied facings for use indoors or out.

WRITE FOR COMPLETE PRODUCT INFORMATION

GUSTIN-BACON *Manufacturing Company* GUSTIN gb BACON ®

220 W. 10th St., Kansas City, Mo.

head in the clouds

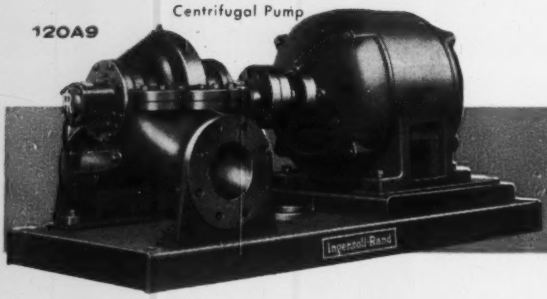
When an air-conditioning installation calls for unusual pumping service, Ingersoll-Rand is the one to supply it. I-R pumps are made to meet requirements of any tonnage, any head—including the highest skyscrapers. Exclusive design features and rugged construction mean dependable, low-cost operation. The wide range of Ingersoll-Rand pumps being specified for air conditioning include Motorpumps, cradle-mounted and horizontally split pumps for deliveries to 3500 gpm and heads to 1100 feet.

a century 1860 – 1960 *of pump progress*

from the leading manufacturer

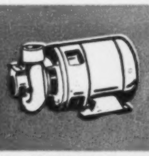
Ingersoll-Rand

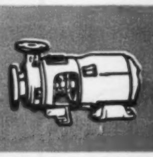
11 Broadway, New York 4, N.Y.

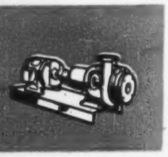


Ingersoll-Rand
Horizontally Split
Centrifugal Pump

OTHER I-R PUMPS FOR AIR CONDITIONING SERVICE:

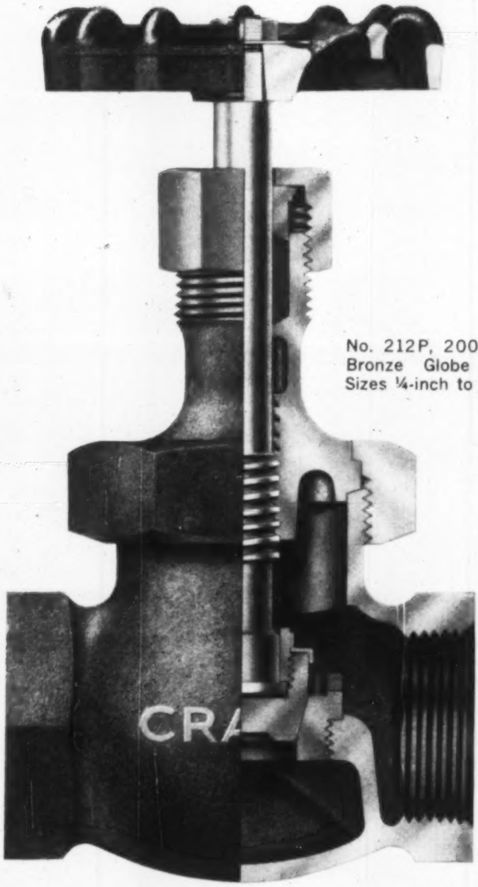

"K" Line Motorpumps


Motorpumps


Cradle-Mounted Pumps

Best choice for throttling service...

CRANE PLUG DISC BRONZE GLOBES



No. 212P, 200-Pound Bronze Globe Valve. Sizes ¼-inch to 3-inch.

These rugged valves are made for the toughest throttling jobs! Use them anywhere . . . on blow-off, boiler feed, soot blower, and drip and drain lines . . . then sit back and forget your maintenance worries.

Crane's "500 Brinell" stainless steel disc and seat give superior protection against corrosion and wear. The wide seating surface resists wiredrawing and damage from foreign matter. Deep stuffing box is filled with high grade packing.

Crane Plug Disc Bronze Globe Valves are made in 150-Pound, 200-Pound, and 300-Pound pressure classes, in a full range of sizes. Your Crane Distributor can ship your requirements from stock.

Crane Plug Disc Bronze Valves are also available in angle pattern

CRANE
CATALOG NO. 60

New! Write for your personal copy of Crane's Catalog 60. In it you'll find complete specifications on Crane's full line of bronze valves, and valves for every fluid handling service.

CRANE®

CRANE CO., INDUSTRIAL PRODUCTS GROUP
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in labor savings alone!

RIDGID®
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THREADING
MACHINE

A Complete Pipe and Conduit Workshop At Your Finger Tips . . . For High-Speed Threading, Cutting, Reaming

CUTS
REAMS
THREADS
RIDGID
SPEED
UNIVERSAL
REV
OFF
FOR

Full 2″ capacity. Plenty of power for up to 12″ geared tools. Universal Die Head included threads ½″ to 2″ pipe and conduit with just two sets of dies. Four other styles of heads available . . . ⅛″ to 2″ pipe or conduit, ¼″ to 2″ bolts. Fast hand-action RIDGID Speed Chuck. Cam-Action Rear-Centering Workholder. Automatic re-circulating oil system. Easy-to-Read Length Gauge.

See and Try This Time and Cost-Saving RIDGID 535 at Your Supply House Today

RIDGID®

THE RIDGE TOOL COMPANY, ELYRIA, OHIO, U.S.A.

The skating is fine in Atlantic City

. . . on rinks built with steel pipe

"Ice skating on our private rink" is a sign now frequently seen next to "Tourist Accommodations" in Atlantic City, N. J. The four establishments shown here have found this added attraction a great help in extending the tourist season throughout all twelve months of the year.

Attractive, too, to the builder and contractor alike, is the promise of long rink life given to each of these rinks by Bethlehem steel pipe. And the low cost of steel pipe is another big feature—it's considerably less expensive than any other ferrous piping material. What's more, steel pipe is available in double-random lengths—and can be fabricated *cold!*

Practical advantages like these make steel pipe the first choice for ice rink installations. Your pipe distributor will be glad to talk it over with you. Or call the nearest Bethlehem sales office.

Steel

for Strength . . . Economy . . . Versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

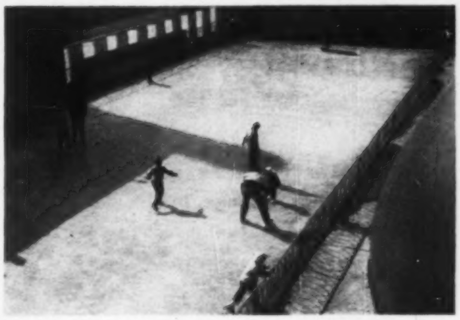
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Colony Motel

Ice rink: 35 x 70 ft
Architects: A. L. & Stanford G. Brooks
Engineer: Jack P. Hartmann
Contractors: Benjamin E. Labov & Sons
Pipe Jobber: Seashore Supply Co.



Empress Motel

Ice rink: 40 x 100 ft
Architect: Rodney C. Williams
Engineers: S. B. & B. H. Strouse
Contractors: Benjamin E. Labov & Sons
Pipe Jobber: Seashore Supply Co.

Chelsea Hotel

Ice rink: 35 x 70 ft
Piping Engineers and Contractors: Benjamin E. Labov & Sons
Pipe Jobber: Seashore Supply Co.

President Hotel and Motel

Ice rink: 45 x 90 ft
Architect: Rodney C. Williams
Engineers: S. B. & B. H. Strouse
Contractor: Wm. J. Crane Company
Pipe Jobber: Seashore Supply Co.

YARWAY Y news briefs

from **Yarnall-Waring Company**, *Philadelphia 18, Pa.*
BRANCH OFFICES IN 19 UNITED STATES CITIES • SALES REPRESENTATIVES THROUGHOUT THE WORLD

WITH YARWAY GUN-PAKT EXPANSION JOINTS YOU NEVER HAVE TO SHUT DOWN STEAM LINES

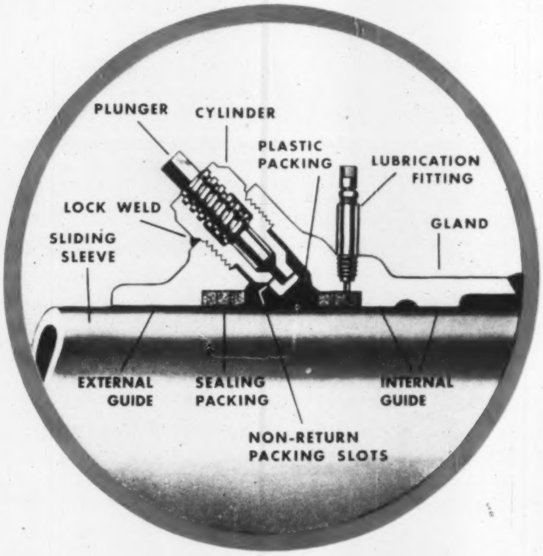
With Yarway GUN-PAKT Expansion Joints it is *never* necessary to shut down the lines to add packing to the joints. When additional packing is needed it is added *with the pipe line under full pressure.* A slug of plastic packing is inserted in the convenient screw-plunger gun—a turn of a wrench and the job is done, the joint is tight. Steam service is continuous. Costly shutdowns are eliminated. Joints never need repacking.

Yarway GUN-PAKT Expansion Joints give users these *extra* advantages, too:

- **Rugged dependability**—All-steel construction. Durable chromium plated seamless steel sleeves. *No chance of metal fatigue.* Wrought steel bases for positive anchorage.
- **Internal and external guides**—provide positive alignment in the stuffing box—*where it counts.*
- **Light weight, streamlined design**—requires less space to install, less space to maintain, smaller manholes.

Accept no substitute! Insist on Yarway GUN-PAKT—the original "packed under pressure" expansion joint, backed by 20 years of experience and thousands of successful installations to its credit.

For full information, and "blue chip" list of industrial plants, universities, institutions and central plants using GUN-PAKT Joints, write to Yarway.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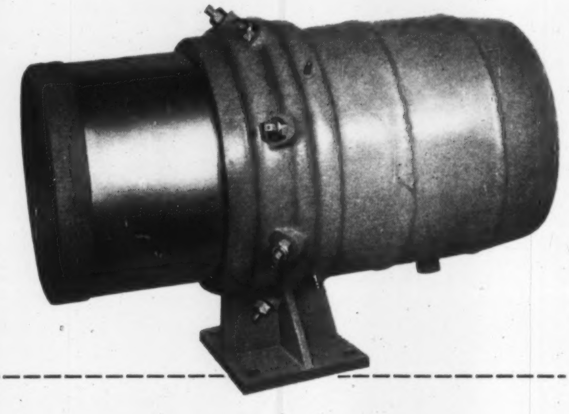
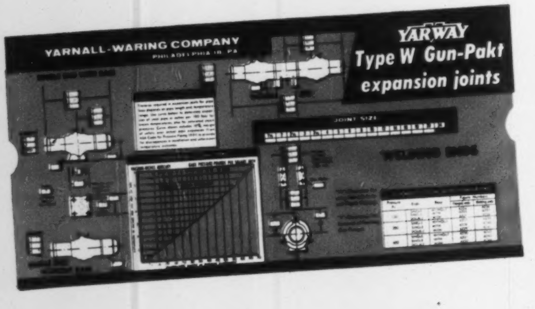
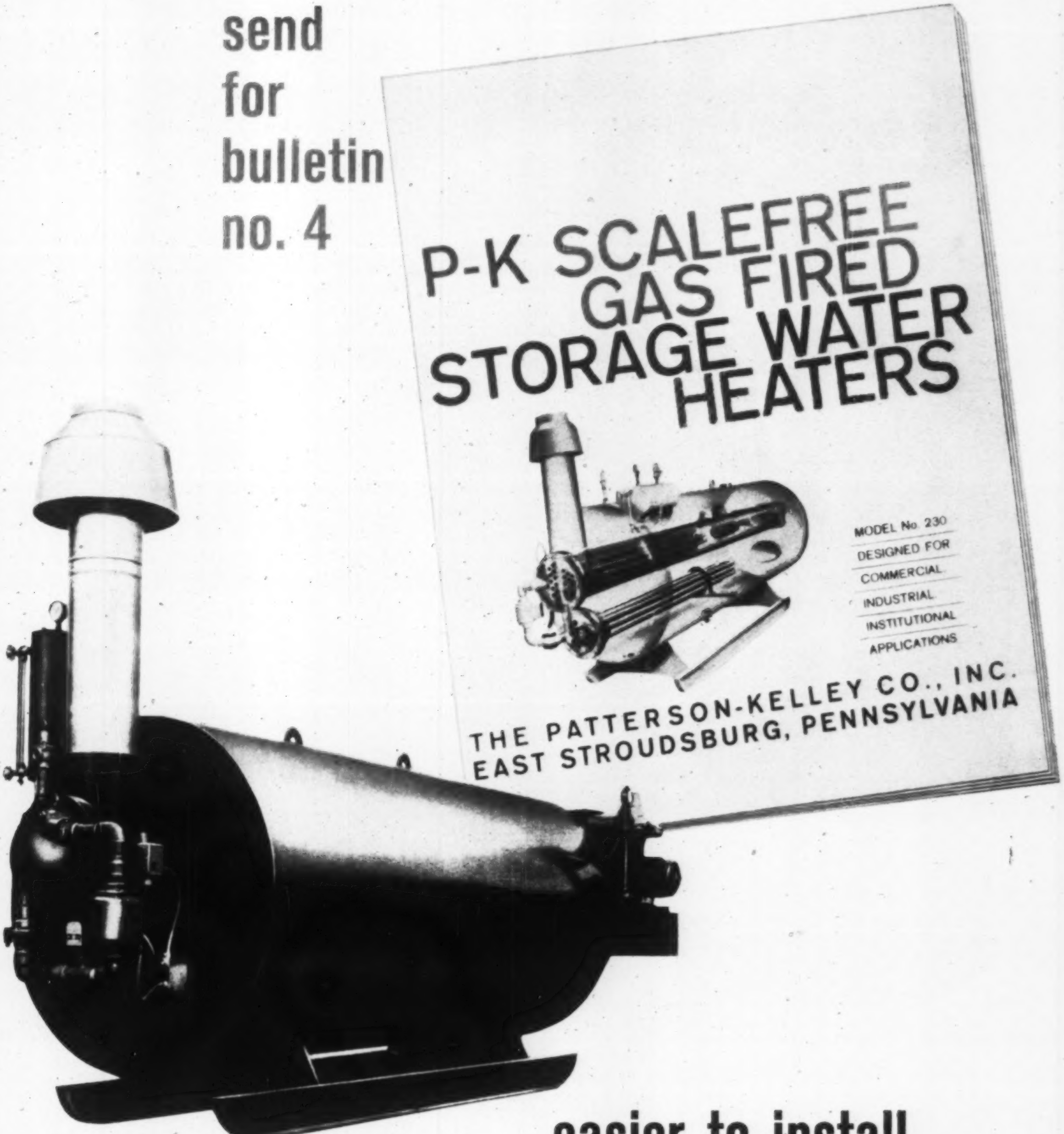



YARNALL-WARING COMPANY
PHILADELPHIA 18, PA.
YARWAY
Type W Gun-Pakt
expansion joints
JOINT SIZE

QUICK ANSWERS TO EXPANSION JOINT PROBLEMS

Want a *new* time- and labor-saving Yarway Expansion Joint Calculator which quickly provides sizes, weights, dimensions, anchor loads, etc. for Yarway GUN-PAKT Joints? Just call your Yarway representative and ask for one—or write us on your company letterhead and we'll see that one is delivered.

send for bulletin no. 4



P-K SCALEFREE GAS FIRED STORAGE WATER HEATERS

MODEL No. 230
DESIGNED FOR
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INDUSTRIAL
INSTITUTIONAL
APPLICATIONS

THE PATTERSON-KELLEY CO., INC.
EAST STROUDSBURG, PENNSYLVANIA

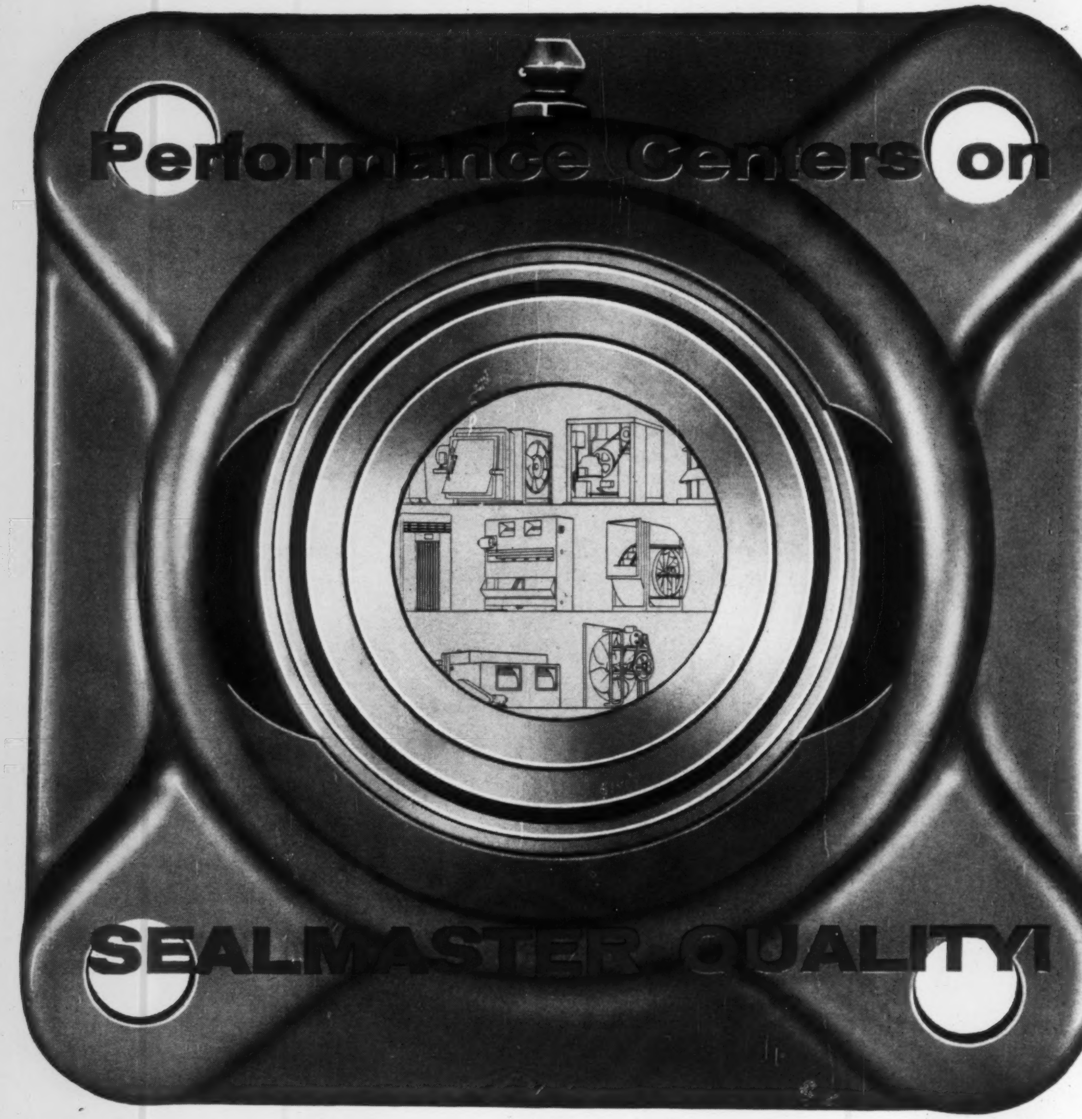
easier to install . . .

easier to maintain

Striking new economies are now available for commercial, industrial and institutional buildings with P-K'S SCALEFREE 230, the first indirect gas fired storage water heater • **Installation.** A complete and automatic package, P-K'S SCALEFREE 230 can be skidded into place, hooked up and checked out quickly. There is no complicated piping or electrical work to run up costs. No stack is needed for extra draft. No foundation is necessary. Factory insulation (optional, as illustrated) further reduces costs and avoids the complications of on-the-site insulating. • **Maintenance.** P-K'S SCALEFREE 230 offers new freedom from trouble. It won't scale—and retains its rated efficiency—because heat transfer occurs below the temperature at which scaling minerals precipitate. Linings of Pre-Krete® or copper keep the storage section free of rust and corrosion regardless of water conditions. • P-K'S SCALEFREE 230 is available in storage capacities from 250 to 4,000 gallons; recovery sections from 390,000 to 2,215,000 BTU. Bulletin No. 4 gives complete engineering and performance data.

Address your request to: The Patterson Kelley Co., Inc.,
102 Morgan Avenue, East Stroudsburg, Pennsylvania.

Patterson Kelley
Water Heater Division



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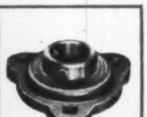
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Ever hear of a bashful air-cooled condenser?

Check the new Halstead & Mitchell vertical air flow condenser

H&M's new ACV Air-Cooled Condenser with vertical air flow hates to be showy. It's so low and so quiet, you hardly know it's there—very appealing to owners, their neighbors, architects and engineers!

Roof loading is low, too, and air flow noise is directed away from surrounding structures. This delights building owners and tenants alike.

Vertical air flow models are available in 5 to 100 tons. And like all H&M Air-Cooled Condensers, the ACV series features exclusive Turbu-Flo fins, spaced wide to prevent clogging by air-borne dirt. Multiple circuiting is available for your specific needs *at no extra cost.*

Get the whole story on H&M Air-Cooled Condensers—with propeller or centrifugal fan. Ask your refrigeration wholesaler for a copy of the new bulletin AC-102. Or write to Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.

Air-Cooled Condensers • Finned Coil Products • Water-Cooled Condensers • Cooling Towers

ACV SERIES —
5 TO 100 TONS

HM

Halstead & Mitchell

PARKER INDUSTRIAL HOT WATER BOILER

126M to 5,000M B.T.U. Designed specifically for closed circuit application such as building heating and industrial processing. Also available for high temperature liquids up to 600°. Gas, oil and combination gas-oil fired.

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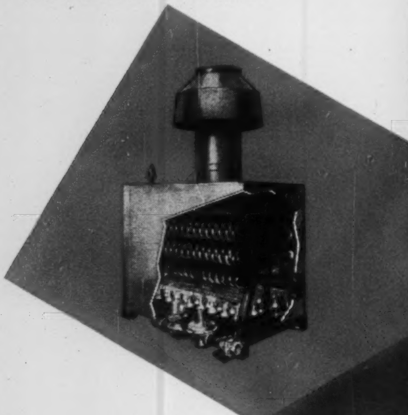

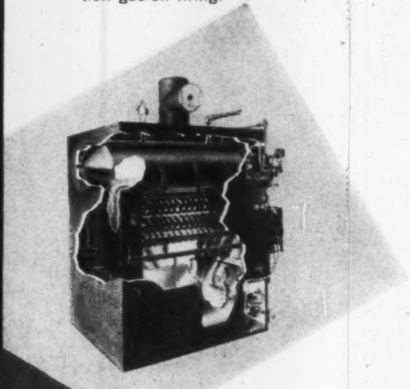

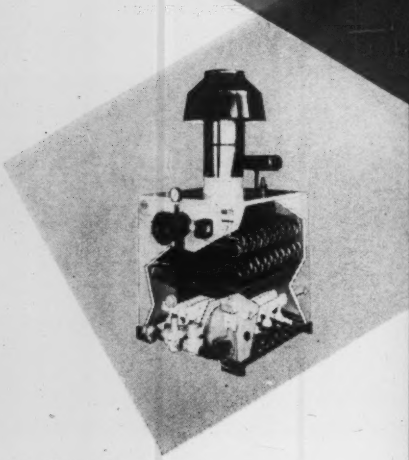

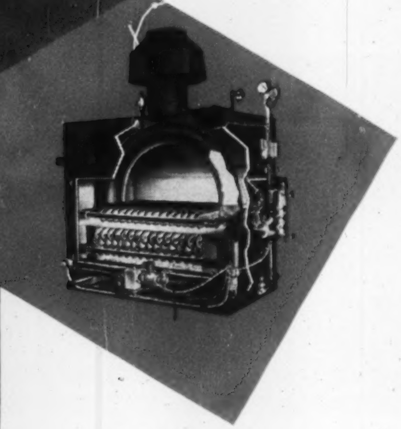

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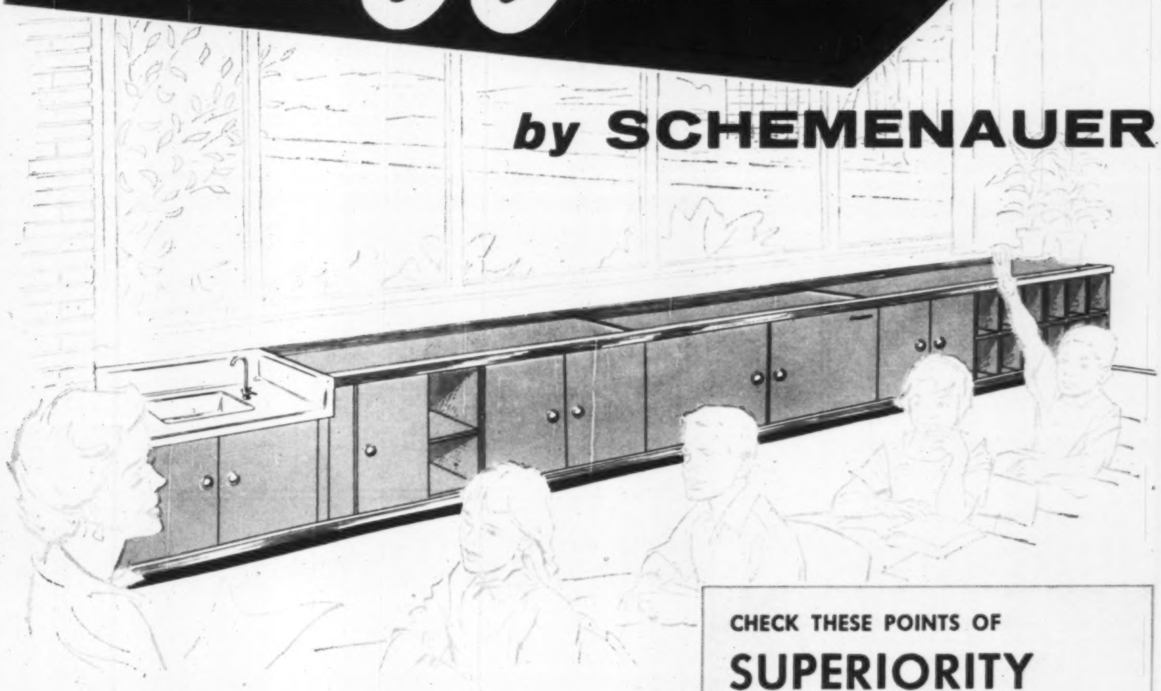

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in performance, style, flexibililty

You can recommend and install Schemenauer Classroom Unit Ventilators and Cabinets with complete confidence, because Schemenauer provides the finest, most carefree performance possible. Designed and built to meet high quality standards of consulting engineers and architects, Schemenauer makes the correct selection for classroom comfort easy.

Three basic types of mechanical units are available for heating and ventilating or heating, ventilating and cooling. A choice of five models gives you the exact capacities you may require. In providing true efficiency with great flexibility in planning, Schemenauer wins acceptance through recognized new standards of quality, greater durability, low maintenance and permanent beauty.

New deep depth cabinets in a wide selection of modular components with functional superiority, stand out by any comparison. Trend setting color-concept styling adds richness to modern decorative expression. Schemenauer gladly works with you through its factory-trained representatives in the selection and application of the New '60' Series. Write for complete details and colorful brochure, without obligation.

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MECHANICAL FEATURES

Notable, among the many mechanical points of superiority, Schemenauer offers more prime coil surfaces . . . counter flow air and water . . . drum-type dampers and simple damper linkage . . . one-piece filter for easy maintenance . . . full and half doors (optional) move laterally to expose complete storage compartments.

Trend Setting DESIGN FEATURES

Doors are constructed with honeycomb lining to help deaden sound, add greater impact strength . . . four-wheel suspension is an exclusive door feature . . . simple, positive cabinet levelling device . . . heavier decorative aluminum trim is impact resistant . . . extruded aluminum discharge grilles and mounting strips . . . big 21½" sink . . . choice of twelve decorator colors for cabinets . . . wood finish doors if desired.

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These, and many other Schemenauer exclusive points of superiority, set new standards that assure you the finest, most carefree performance possible. Get complete details . . . send for the New "FACTS" Booklet. It will tell you why you should specify the New Schemenauer '60' Series.

BE SURE YOU SEE BOOTHS 1263-65-67
A. S. H. R. A. E. SHOW in CHICAGO
FEB. 13 thru 16, 1961

Monarch

SPRAY NOZZLES

for

AIR WASHERS . . . COOLING TOWERS

These are "non-clogging" nozzles with a single large tangential lead hole to the swirl chamber that will never clog from any impurities small enough to pass through the orifice. Swirl chamber is conical on both ends and pivots liquid like a top to produce an exceptionally fine, evenly distributed, balanced spray of about 80° included angle. Wider spray angles up to 130° can be furnished to order.

Standard material Brass. Also available in Stainless Steel and Monel. Pipe size from 1/8" to 1". 1/4" size is 1-5/16" long and made from 5/8" square stock.

CAPACITIES: GALLONS PER HOUR

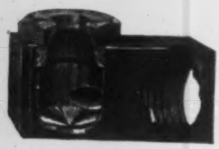


Fig. 631

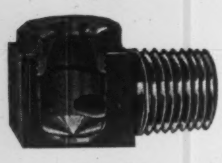


Fig. 629

Pipe Size and Fig. No.	Orifice	Lead	OPERATING PRESSURE: LBS. PER SQUARE INCH							
			5	10	20	30	40	60	80	100
1/8" Fig. 629	69	69			2.7	3.3	3.8	4.7	5.4	6.0
	61	61			4.2	5.1	5.9	7.2	8.3	9.2
	61	53	2.7	3.7	5.3	6.5	7.5	9.2	10.5	11.8
	53	53	4.0	5.7	8.2	10.0	11.5	14.1	16.3	18.2
	49	49	5.6	7.9	11.1	13.6	15.7	19.3	22.2	24.8
1/4" Fig. 629 or Fig. 631	3/32	3/32	9.6	13.5	19.2	23.4	27.0	33.0	38.4	42.9
	1/8	3/32	12.2	17.3	24.4	29.9	34.6	42.4	49.0	54.9
	1/8	7/64	14.6	20.6	29.1	35.7	41.0	50.4	58.4	65.1
	1/8	1/8	15.9	22.5	31.9	39.2	45.1	55.2	63.7	71.5
	11/64	1/8	21.7	30.6	43.2	53.0	61.1	75.0	86.4	98.0
1/4" Fig. 629 or Fig. 631	3/16	5/32	30.5	43.2	61.1	74.9	86.4	107	122	136
	7/32	3/16	45.1	63.8	90.5	110	128	156	180	202
	13/64	13/64	54.7	77.8	108	134	155	191	217	246
	7/32	7/32	59.8	84.5	120	146	169	207	140	267

HUMIDIFIERS . . . . . . AIR CONDITIONERS

The H-261 and F-80 brass nozzles produce the finest, softest, fog-like spray possible with low direct pressure only. Popular sizes are nozzle 3.00 and 5.00 tested either 80° or 120° at 25 pounds.

All Brass construction with 120 mesh Monel screen strainers and 1/8" or 1/4" female 1/4" male pipe connection in the F-80 and 1/4" male only in the H-261. The H-261 is 1 3/8" overall and the F-80, 1 7/8".

CAPACITIES: GALLONS PER HOUR

Nozzle No.	OPERATING PRESSURE: LBS. PER SQUARE INCH							
	10	25	30	35	40	60	80	100
1.35					.57	.70	.81	.90
1.65					.75	.92	1.06	1.18
2.00				.87	.94	1.14	1.32	1.49
2.50			.98	1.01	1.13	1.39	1.60	1.80
3.00		1.00	1.10	1.18	1.27	1.55	1.79	2.00
3.50		1.30	1.41	1.54	1.64	2.01	2.32	2.60
4.00		1.50	1.64	1.78	1.90	2.33	2.69	3.00
4.50		1.90	2.09	2.25	2.40	2.94	3.40	3.80
5.00		2.20	2.41	2.60	2.78	3.41	3.94	4.40
5.50		2.40	2.63	2.84	3.04	3.72	4.30	4.80
6.00		2.60	2.85	3.08	3.28	4.03	4.66	5.30
7.00		3.00	3.30	3.55	3.80	4.65	5.37	6.00
7.50	2.02	3.20	3.50	3.78	4.05	4.96	5.74	6.40
8.30	2.27	3.60	3.95	4.27	4.55	5.58	6.45	7.20

Fig. H-261

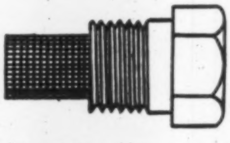
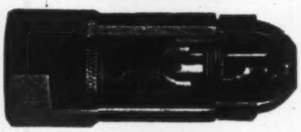


Fig. F-80 Brass



OIL BURNERS

Monarch Stainless Steel Nozzles for high pressure gun-type oil burners are the Industry yardstick for nozzle performance. Each nozzle individually tested for capacity, spray angle and uniformity of spray on No. 2 fuel oil weighing 7.16 pounds per gallon at 74°F. and 34 S. S. U. viscosity at 100°F. Standard spray angles are 30°, 45°, 60°, 70°, 80° and 90° in small sizes.

Standard capacity sizes (GPH at 100 psi.): .40, .50, .60, .75, .85, 1.00, 1.10, 1.20, 1.25, 1.35, 1.50, 1.65, 1.75, 2.00, 2.25, 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50, 6.00, 6.50, 7.00, 7.50, 8.30, 9.50, 10.50, 12.00, 13.80, 15.30, 17.50, 19.50, 21.50, 24.00, 28.00, 30.00, to 60.0 in 5.00 GPH steps and 60.0 to 100.0 in 10.00 GPH steps.

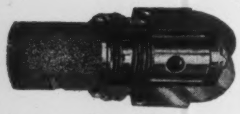


Fig. F-80
Stainless Steel

Write for complete Catalogs and prices.

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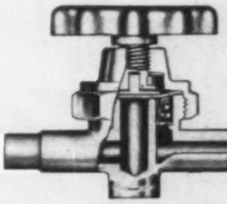

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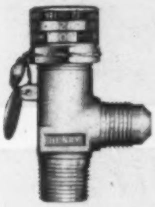

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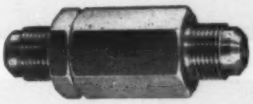

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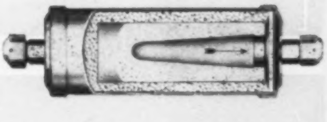

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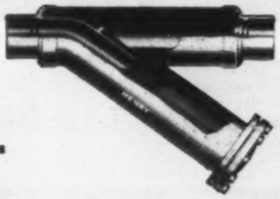
DRI-COR Sealed and Cartridge Types
with Molded Core and Granular Desiccants



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Sealed and Cleanable—Applicable for
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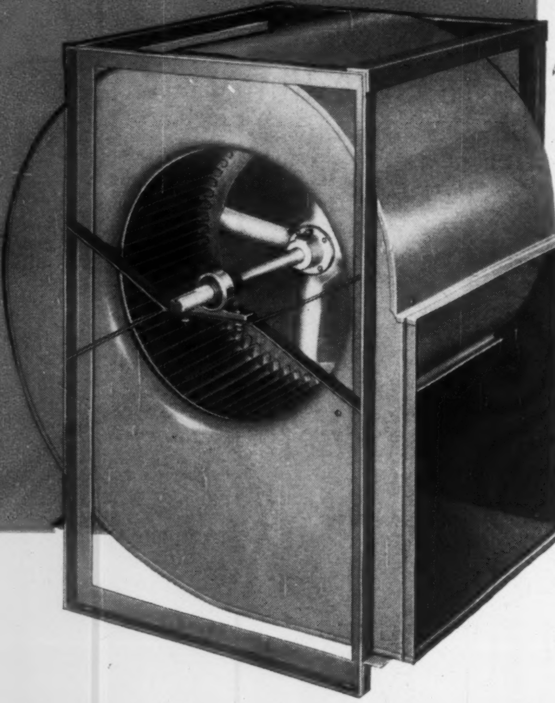
22", 25" and 30"

DESIGNED FOR COMMERCIAL INSTALLATIONS



Built-in flexibility makes the Lau "Series A" the number one choice for commercial and industrial installations. With a C.F.M. range of from 8,000 to 36,000, this efficient unit may be used in many different sizes and types of air conditioning systems. For even greater C.F.M. capacity and flexibility the "Series A" may be operated in banks of two or three.

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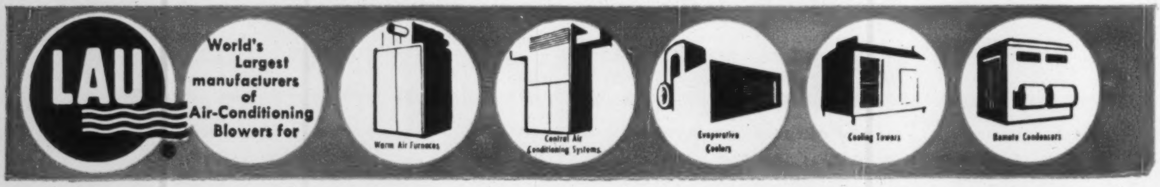
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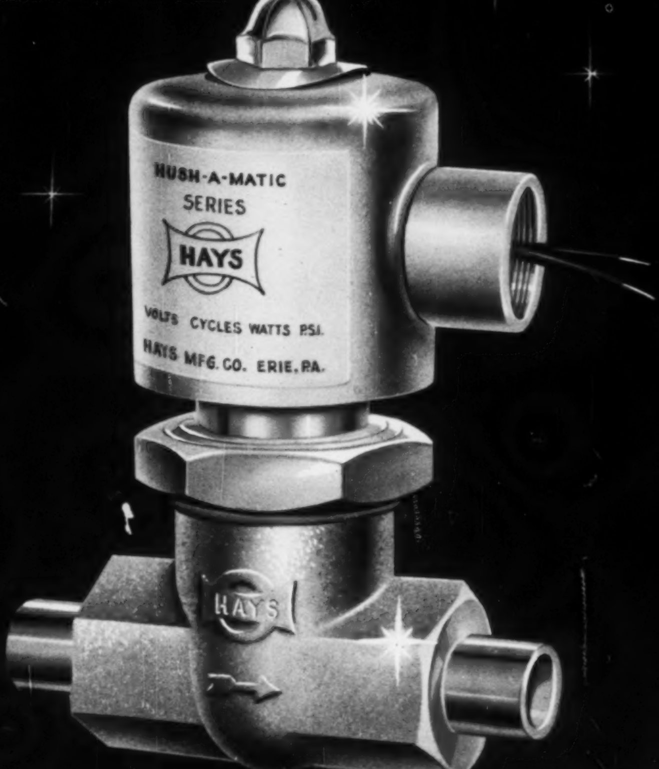
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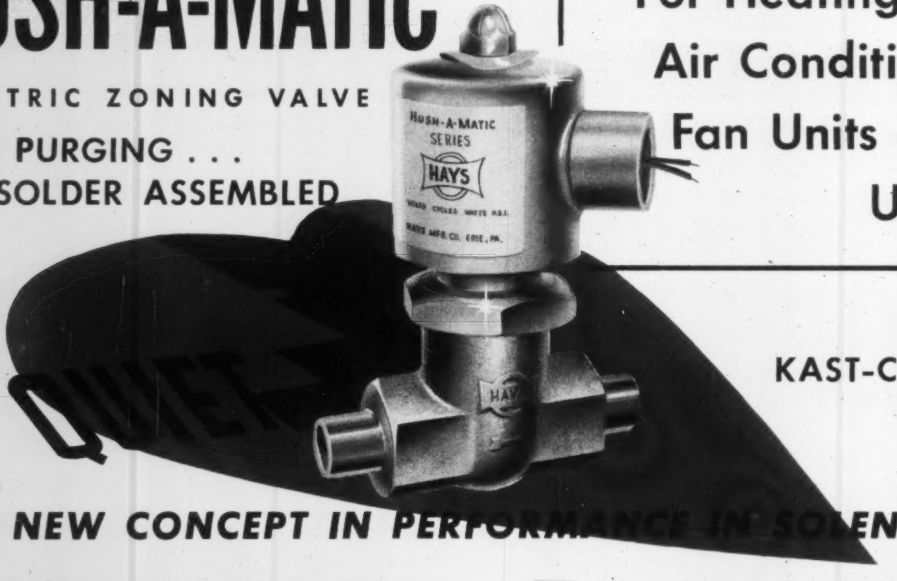

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KAST-COIL SOLENOID
GUARANTEED
FOREVER

A NEW CONCEPT IN PERFORMANCE IN SOLENOID VALVES

SILENTLY OPENS
NO CLICK . . . NO SURGE

RELIABILITY
CONTAMINATION-PROOF PERFORMANCE

SILENTLY OPERATES
NO HUM . . . NO GURGLE

RELIABILITY
WATER-PROOF ENCAPSULATED SOLENOIDS

SILENTLY CLOSES
NO HAMMER . . . NO VIBRATION

RELIABILITY
CORROSION-PROOF BRONZE AND TEFLON

SILENTLY CYCLES
NO SERVICING . . . NO ADJUSTING

RELIABILITY
TEMPERATURE-PROOF TEFLON PARTS

SILENT . . . RELIABLE

FIRST CLASS
PERMIT NO. 189
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Automatic Controls Division
HAYS MANUFACTURING COMPANY
851 West Twelfth Street
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FOR MORE "INFO"
ON HAYS **HUSH-A-MATIC**
ZONING . . .

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CARD
TODAY!

WIDER CHOICE
DEKORON®
NEW POLY-COR

Dekoron products are first in the field for wide selection . . . quality . . . service . . . new product development. And the New Poly-Cor is the latest development to make instrument tubing news.

For here is a superb instrument line harness of exceptional quality with features never before available. Check them carefully. New grade of all-black polyethylene for operation at higher temperatures . . . number coding of tubes for easier hook-up . . . Mylar® vapor barrier . . . lighter weight. All these features are now standard in New Poly-Cor — and at no increase in price.

Request a Dekoron sample today and get full specification data from your local representative. Dekoron products represent years of experience in the instrument field . . . are application-engineered by the company with the greatest application experience.

A-2318A

Lighter Weight **EASIER INSTALLATION**
Vinyl Sheath **FLEXIBILITY**
Lengths **UP TO 1000 FEET**
Number Coding **CONVENIENCE**
All-Black Tubes **ULTRAVIOLET RESISTANCE**
Mylar Barrier **NO PENETRATION**
New Black Polyethylene **HIGHER TEMPERATURE OPERATION**
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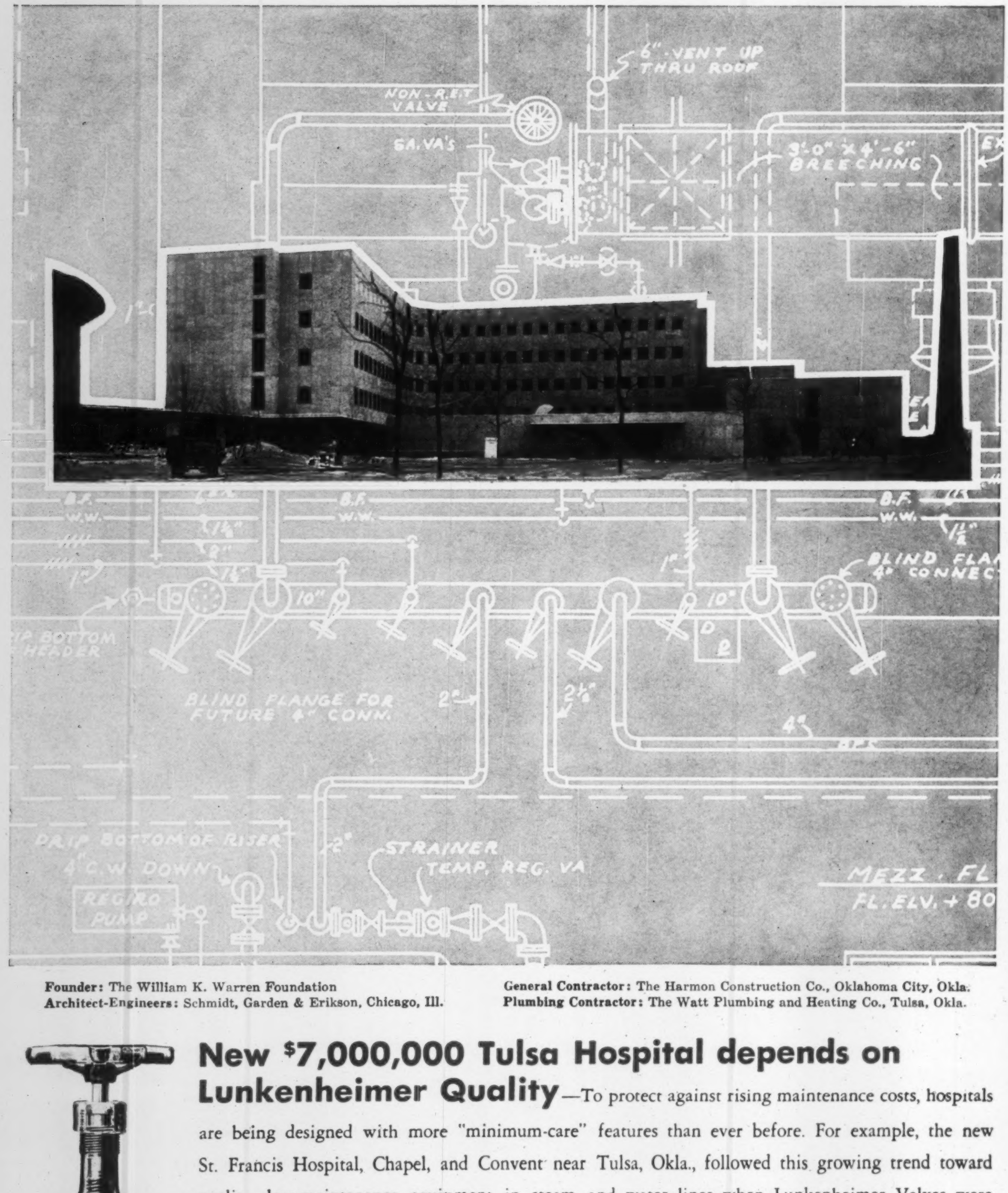
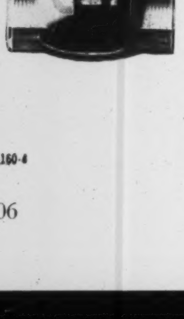
International Amphitheater Chicago
February 13-16

Dekoron® products
quality • research • service

SAMUEL MOORE & COMPANY • DEKORON PRODUCTS DIVISION • **MANTUA, OHIO**


6" VENT UP THRU ROOF
NON-RET VALVE
SA. VA'S
3'-0" x 4'-6" BREECHING
B.F. W.W.
BLIND FLA
4" CONNEC
BLIND FLANGE FOR FUTURE 4" CONN.
DRIP BOTTOM OF RISER
4" C.W. DOWN
RECIRC PUMP
STRAINER
TEMP. REG. VA
MEZZ. FL
FL. ELV. + 80

Founder: The William K. Warren Foundation
Architect-Engineers: Schmidt, Garden & Erikson, Chicago, Ill.
General Contractor: The Harmon Construction Co., Oklahoma City, Okla.
Plumbing Contractor: The Watt Plumbing and Heating Co., Tulsa, Okla.



New $7,000,000 Tulsa Hospital depends on Lunkenheimer Quality—To protect against rising maintenance costs, hospitals are being designed with more "minimum-care" features than ever before. For example, the new St. Francis Hospital, Chapel, and Convent near Tulsa, Okla., followed this growing trend toward quality, low-maintenance equipment in steam and water lines when Lunkenheimer Valves were specified. Outstanding, maintenance-free performance will again prove that **"You can't find the *cost* of a valve on a *price* list."** The Lunkenheimer Company, Cincinnati 14, Ohio.

- BRONZE
- IRON
- STEEL
- PVC

LUNKENHEIMER QUALITY

LUNKENHEIMER®
THE ONE *Great* NAME IN VALVES

L-160-4

Keflex Manufacturing Division
U. S. Flexible Metallic Tubing Co.
Since 1905

LAMINATED
STAINLESS STEEL BELLOWS
See Our Catalog in Sweet's Files

General Offices — 63 Main St.,
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KEFLEX QUADRA-SIDE EXPANSION COMPENSATORS
FOR STEAM AND HOT WATER HEATING SYSTEMS
USED WITH CONVECTOR AND FIN TUBE BASEBOARD RADIATION UNITS IN SCHOOLS, HOSPITALS, OFFICES AND COMMERCIAL INSTALLATIONS

TYPE 7 Q square brass telescoping case protects laminated stainless steel bellows from torsion, squirm, misalignment and external damage. Compensators are used in high and low pressure hot water supply lines, risers and for baseboard radiation. Extra flexibility provides maximum cyclic life. Units are very compact and rugged. Sizes ¾" thru 3". Pressures to 300 PSI. Temperatures to 800°F. Traverse: Single Units, total 2" (1-½" compression, ½" extension) Dual units available.

TYPE 11 Q-T has heavy square telescoping case and laminated stainless steel bellows. For use in risers and with baseboard radiation. Test pressure 150 PSI, working pressure 100 PSI, temperatures to 300°F. Traverse: Total 1" (¾" compression, ¼" extension).

TYPE 7 Q WITH BRASS FEMALE THREADED ENDS
Working Pres. 300 PSI Maximum
Temp. 800 F

Pat. Pend.

Nom. I.P.S.	Overall Length	Max. O.D.	Wt. #
¾"-1.00"-1.25"	6.50"	2.00"	2
1.50	6.50	2.50	4
2.00	6.50	3.00	5
2.50	6.50	3.50	6
3.00	6.50	4.00	9

TYPE 7 Q-T WITH COPPER TUBE ENDS
Maximum Pres. 200 PSI Maximum
Temp. 300 F

Pat. Pend.

To Fit Copper Tubing		Overall Length	Max. O.D.	Wt. #
Nominal I.D.	Actual O.D.			
¾"	⅞"	6.50"	2.00"	1½
1	1⅛	6.50	2.00	1½
1¼	1⅜	6.50	2.00	1½
1½	1⅝	9.00	2.50	3½
2	2⅛	10.00	3.00	4½
2½	2⅝	10.75	3.50	5½
3	3⅛	11.50	4.00	8¼

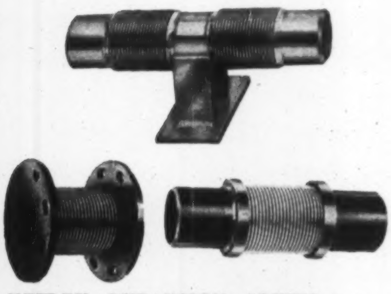
TYPE 11 Q-T WITH COPPER TUBE ENDS
Maximum Pres. 100 PSI Maximum
Temp. 300 F

KEFLEX
TYPE 11-QT

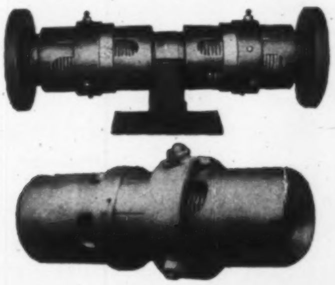
Pat. Pend.

To Fit Copper Tubing		Overall Length	Max. O.D.	Wt. #
Normal I.D.	Actual O.D.			
¾"	⅞"	4.50"	1.50"	1¼
1	1⅛	4.50	1.50	1¼
1¼	1⅜	4.50	1.75	1½
1½	1⅝	4.50	2.25	3
2	2⅛	4.50	2.75	4

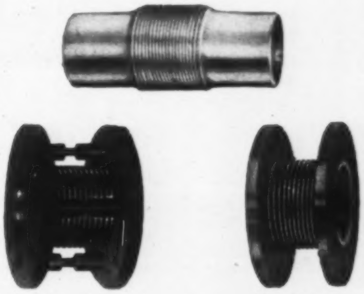
EXPANSION JOINTS—VIBRATION ABSORBERS—FLEXIBLE CONNECTORS—PIPE GUIDES
Force Required to Compress Keflex Expansion Joints Their Full Rated Traverse is Usually Less Than 100 Lbs., Total



KEFLEX EXPANSION JOINTS — corrugated, packless type for steam and hot water heating systems and process piping. Laminated stainless steel bellows with internal liner guides and stainless steel contour control rings. Weld ends, or flanges. Outside shrouds and intermediate anchor bases available. Sizes 2" through 48". Pressures 70 to 450 PSI. Temperatures to 800° F. Furnished for various required traverses.

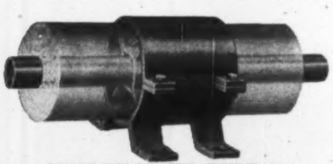


KEFLEX-KETROL CONTROLLED EXPANSION JOINTS — positive protection against torsion. For use in pipe lines to compensate for expansion and contraction. Shroud has intermeshing fingers providing concentric guiding and protection against squirm, torsion, and external damage to laminated stainless steel bellows. Designed for high pressure, high temperature hot water service. Movement is controlled by limit stops. Sizes 2" through 48". Pressures to 450 PSI and temperatures to 800° F.



KEFLEX FLEXIBLE CONNECTORS AND VIBRATION ABSORBERS — to absorb vibration from pumps, chillers, and compressors. Serves to relieve stress on pump volute when piping is misaligned. Extra flexibility of laminated stainless steel construction produces long cyclic life. Compact units save space and are easy to install. Available with or without tie rods. Sizes 2" through 48". Pressures to 450 PSI and temperatures to 800° F.

Modified Types are available for special conditions requiring higher pressure, temperatures, traverse, or combination deflections.



KEFLEX-MAVE TYPE M

Fabricated steel pipe guides for concentric guiding of pipe lines. Special insulated guides are available for chilled water.

FLEXIBLE "BMH" CONNECTORS

"USF" BRONZE VIBRATION ABSORBERS

Braided bronze Metal Hose assemblies made in standard lengths. Usually used as flexible connectors on pumps and other mechanical equipment for heating and air conditioning service. Available with threaded male ends, flanges, and copper tube sweat ends.

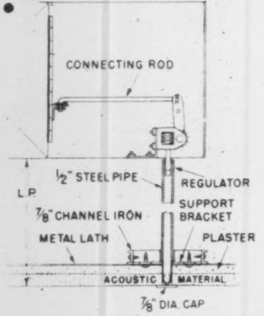
Why YOUNG REGULATORS are designed for Cold Rolled Steel Rod

No. 700 Remote Control Regulator is for manual control of dampers. Using Young Corner Pulleys it can operate three Young No. 805 Dampers, 30" x 18", at distances of 250' or more.

Cold rolled steel rod has a very close tolerance of plus .000" and minus .003". Young Regulator bases, end bearings and bearing sets are precision designed and made of Zamak No. 3 die casting material for a close press fit with cold rolled steel rod.

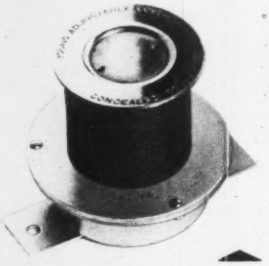
Ordinary regulators, using hot rolled steel rod with a greater tolerance of plus or minus .0075", fit more loosely. Naturally, they will not give the quiet, long lasting, vibrationless operation assured with precision designed Young Regulators. The difference, not visibly noticeable by looking at the regulators, shows up plainly in the operation, especially where duct velocities are 250 f.p.m. or greater.

Young Regulators and Controls are quality designed and manufactured to give the most efficient operation possible to all air conditioning systems.



No. 896 Air-Split Regulator Installation

Designed for operation of a splitter damper in a vertical or horizontal position from a suspended ceiling.

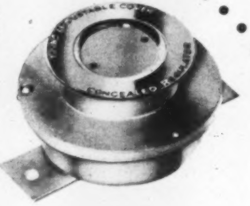


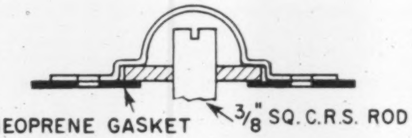
No. 330 Floor Line Adjustable Cover Regulator

Designed for perimeter heating and cooling, this regulator is placed in the floor near a grille for accurate control of the volume of air in a branch duct. Cover plate screws down flush with the finished floor.

No. 315 Concealed Regulator with Adjustable Cover

For use in acoustical ceilings or walls. Cover plate, 2⅜" in diameter, is adjustable for heights from ½" to 1¼".





No. 429FD End Bearing

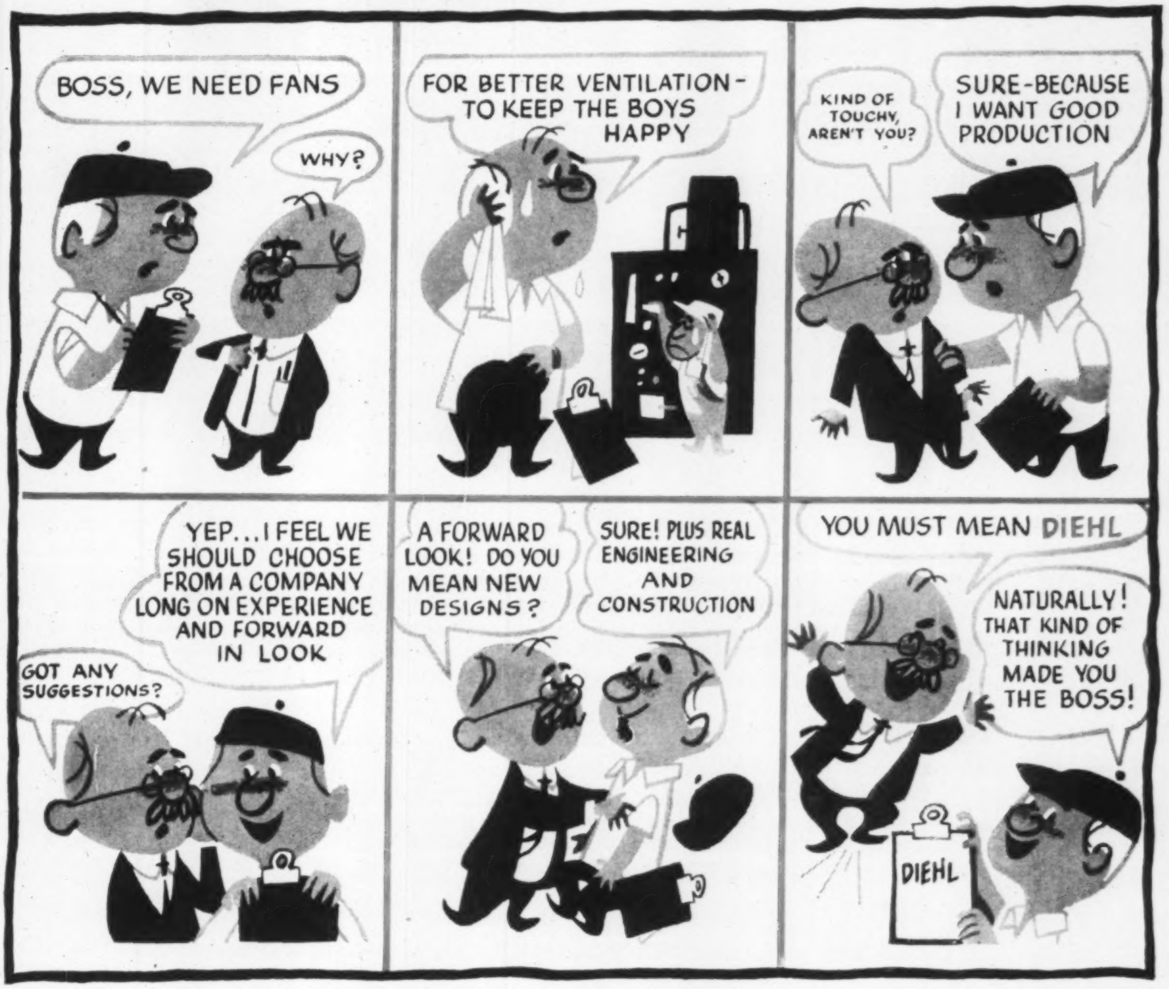
For use on rectangular ducts or ducts over 8" in diameter. Damper rod and bearing is encased and has neoprene gasket to prevent leakage around the aperture.

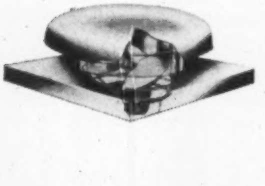
See our catalog in Sweet's Architectural File or Engineers' Product File

YOUNG REGULATOR COMPANY
20910 Miles Parkway Cleveland 28, Ohio

What makes a good boss?

let's listen:


BOSS, WE NEED FANS
WHY?
FOR BETTER VENTILATION - TO KEEP THE BOYS HAPPY
KIND OF TOUCHY, AREN'T YOU?
SURE-BECAUSE I WANT GOOD PRODUCTION
YEP...I FEEL WE SHOULD CHOOSE FROM A COMPANY LONG ON EXPERIENCE AND FORWARD IN LOOK
GOT ANY SUGGESTIONS?
A FORWARD LOOK! DO YOU MEAN NEW DESIGNS?
SURE! PLUS REAL ENGINEERING AND CONSTRUCTION
YOU MUST MEAN DIEHL
NATURALLY! THAT KIND OF THINKING MADE YOU THE BOSS!
DIEHL



LOW PROFILE DIRECT DRIVE POWER VENTILATORS 10 and 14 inch

Exceptionally quiet, economical, attractive and efficient for the ventilation of conference rooms, small offices, lavatories, storage spaces and similar limited area enclosures.

HIGH PRESSURE HEAVY DUTY DIRECT DRIVE EXHAUST FANS 18 to 48 inch

These fans are specially designed for ventilating areas where dirt, smoke, steam, fumes, etc. are excessive. Static pressures up to 1 inch.

And that kind of thinking makes *you* the boss of every fan job. Just sell and install the right DIEHL Fans. DIEHL is here to stay with a bigger and better fan line. Your orders are given immediate attention from our large stock. Plus DIEHL Service Stations throughout the country for your convenience.

Catalog 3700 describes the entire line, tells the whole story. Just clip the coupon.

Architects and Engineers cordially invited to visit us at Booth N-433 at the 15th International Heating & Air Conditioning Exposition, February 13-16 in Chicago, Ill.

Diehl*

*A Trademark of DIEHL MANUFACTURING COMPANY

DIEHL MANUFACTURING COMPANY
A Subsidiary of THE SINGER MANUFACTURING COMPANY
Finderne Plant, SOMERVILLE, NEW JERSEY

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Company________________________

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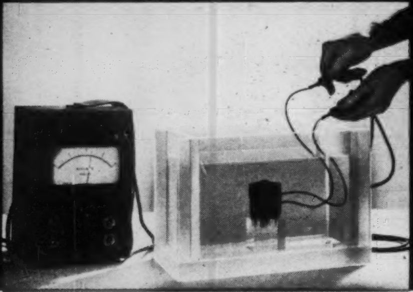
City____________ Zone____ State________

NEW! WATERPROOF!

J-E
SOLENOID VALVE
TYPE
PRESS
3MS5
250
COVERED BY ONE OR MORE
NOS. U.S. 2,736,157 2,870,968
CANADA 541,909
OTHER U.S. & FOR
PATS. PEND.
JACKES-EVANS MFG. CO. ST. LOUIS

SOLENOID VALVES WITH EPOXY-CLAD COILS

at no additional cost!



LINE TESTED AT 2300 VOLTS
completely submerged in water

NOW STANDARD ON ALL REGULARLY CATALOGUED J-E VALVES

All regularly catalogued J-E Solenoid Valves are now supplied with coils completely encased in specially compounded EPOXY RESIN . . . a new miracle insulation material that effectively eliminates coil failure. Your choice of numerous valve types with coils for 24V-60 cy., 115V-50/60 cy., 208/230V-50/60 cy. or 115/230V-50/60 cy. . . . all approved for U. L. listing.

IMPERVIOUS TO ALMOST ANYTHING and EVERYTHING . . . Valves with J-E EPOXY-CLAD COILS are unaffected by condensation, frost, oil, gasoline and many other corrosive liquids and vapors.

ADDITIONAL FEATURES:

- New Color Coded Leads . . . Cadmium Plated Coil Housing and Attached Junction Box — **at no extra cost.**
- Same low temperature rise as in previous J-E valves.
- Interchangeability . . . only one size coil for all J-E refrigeration valves up to 110 tons liquid R22 . . . and one size coil for all J-E industrial valves, 5/16″ to 1½″ port dia.
- Minimum investment in stock and shelf space.

J-E

For additional details
write, wire or phone

Controls Division
JACKES-EVANS MFG. CO.
4427 Geraldine Ave., St. Louis 15, Mo.
EVergreen 5-8050

MARLO COILS SERVE ASSEMBLY ROOM FOR FIRST MANNED SPACE CAPSULE

Equipment Had Demonstrated Its Quality and Dependability In Previous Installations

The "Project Mercury" space capsule, designed and built by McDonnell Aircraft Corporation to carry a man in orbit around the earth, is assembled in a "Super Clean White Room" operated under incredibly stringent environmental and hygienic conditions.

The air handling system serving this special chamber at the McDonnell plant is equipped with Marlo heating and cooling coils. Why was Marlo selected for this installation? McDonnell plant engineer George [illegible] says, "We had used Marlo equipment in a previous white room. Our complete satisfaction with the performance of their units, plus their ability to deliver to meet our tight production schedules answered our coil needs for our space capsule assembly room."

Whether it's an unusual installation like McDonnell's "Super Clean White Room", or an ordinary type of heating or cooling project, you'll find the coils you need in the complete Marlo line. The Marlo representative in your area can give you detailed information.

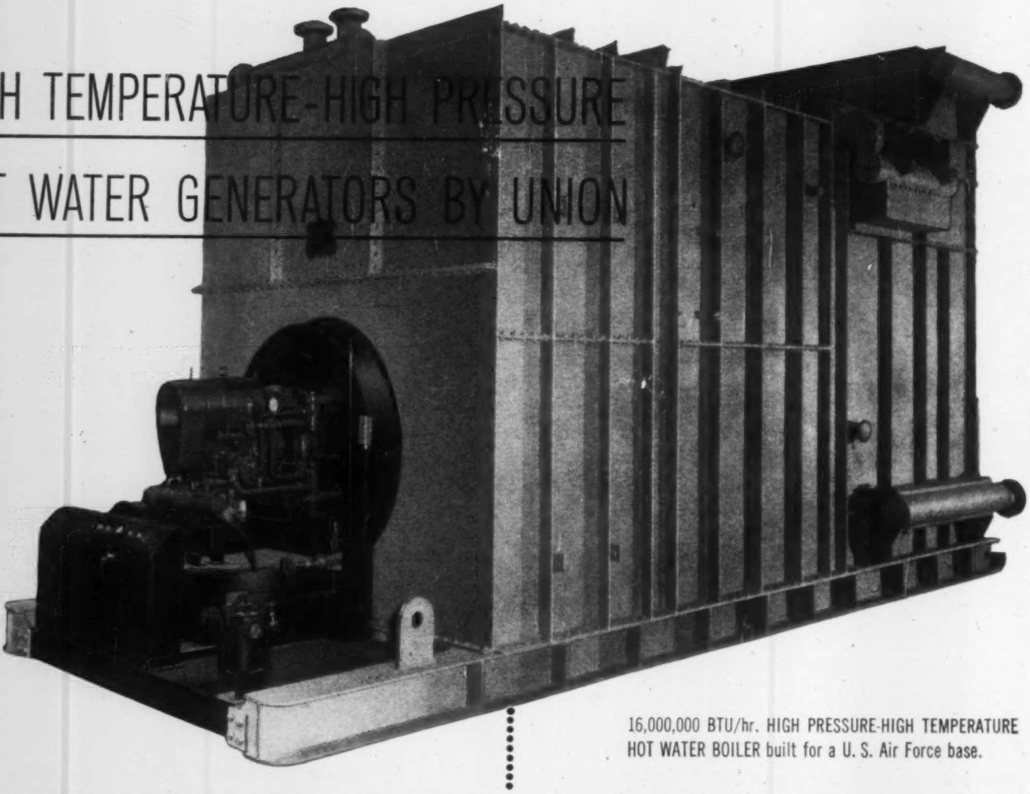
BOOTH 1215
INTERNATIONAL HEATING &
AIR-CONDITIONING EXPOSITION

MARLO coil co.

ST. LOUIS 11, MISSOURI
Quality Air Conditioning and Heat
Transfer Equipment Since 1925

WORLD-WIDE DISTRIBUTION
MARLO INTERNATIONAL LTD.
P.O. BOX VADUZ 34679
VADUZ FURSTENTUM LIECHTENSTEIN

HIGH TEMPERATURE-HIGH PRESSURE HOT WATER GENERATORS BY UNION



16,000,000 BTU/hr. HIGH PRESSURE-HIGH TEMPERATURE HOT WATER BOILER built for a U. S. Air Force base.

SHOP ASSEMBLED UNITS INSTALLED WITHOUT COSTLY FIELD BALANCING

Right from the start, you can save with a Union shop assembled HTHP Hot Water Generator. With all of its circuits of the same hydraulic length, time consuming field balancing can be eliminated. Most units do not require orifices or any other mechanical adjustments to equalize flow at the time of installation.

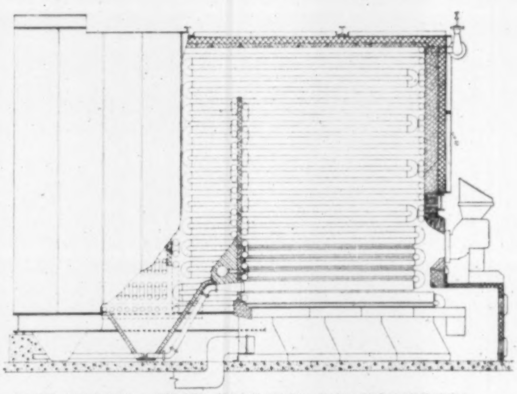
High water velocities (above 5 ft./sec.) and liberally proportioned, water cooled furnaces eliminate localized overheating. As there are no multi-tube circuits in the radiant section, recirculation within a circuit is impossible, thereby eliminating vapor binding or stagnant flow areas.

Liquid and gas flow run counter to each other. With the liquid inlet positioned at the top of the convection section, the lowest temperature liquid is served by the lowest temperature gas. As a result, generator efficiency is improved and the risk of thermal shock minimized.

Standard units (both shop assembled and field erected) can be modified to meet a wide range of job requirements. They can be arranged for firing with most commercial fuels as well as waste fuels in liquid, gaseous or solid form.

For specific information, outline your requirements to a Union representative or contact Union Iron Works.

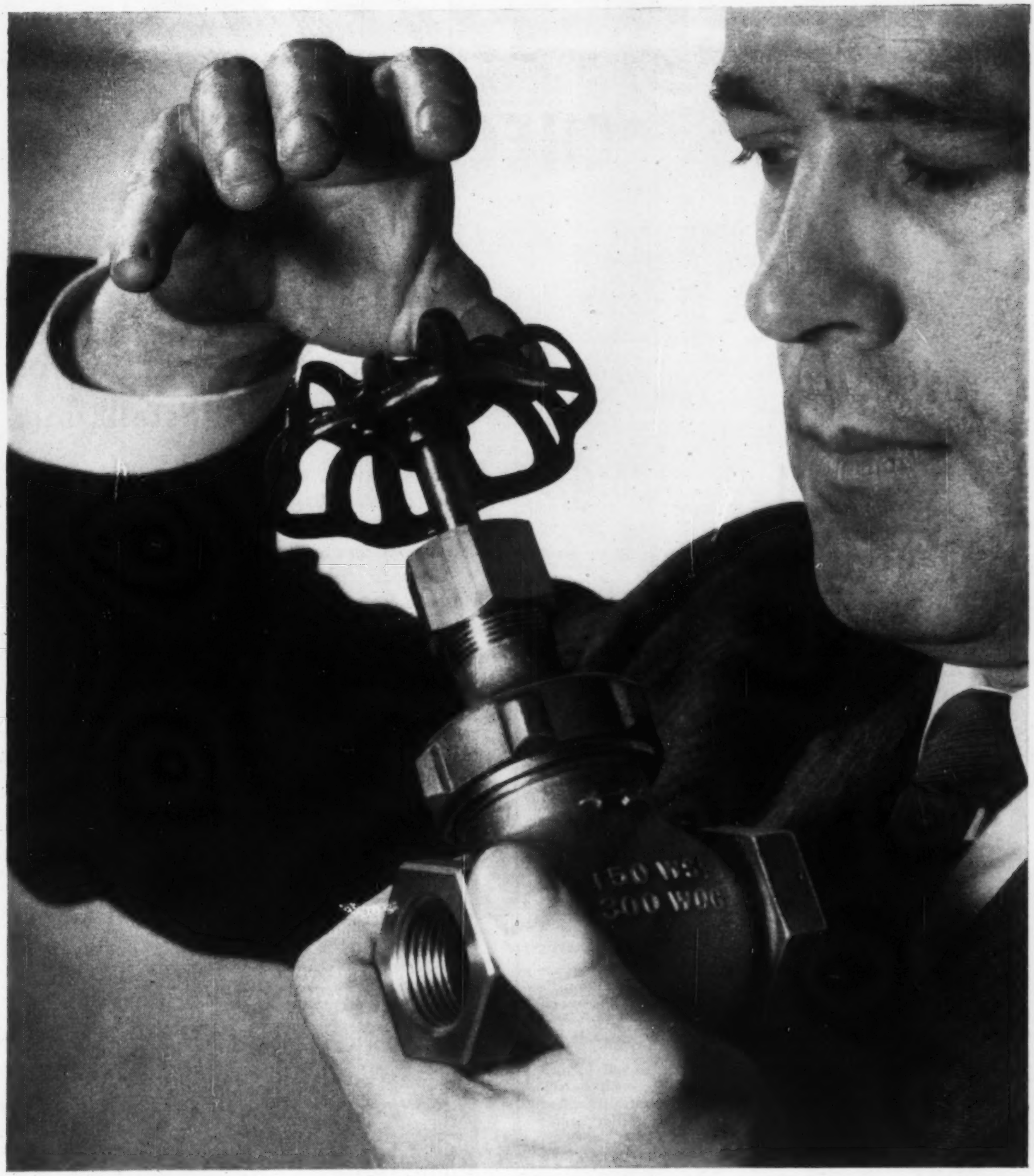
UNION IRON WORKS • ERIE, PENNSYLVANIA
DIVISION OF RILEY STOKER CORP.



31,000,000 BTU/hr. FORCED CIRCULATION, HIGH PRESSURE-HIGH TEMPERATURE HOT WATER BOILER. Equipped for firing by an oscillating grate spreader stoker with fly ash reinjection. Fully factory-assembled for shipment.

UNION

water tube steam generators and allied equipment



Ohio Brass
O-B VALVES

MEN WHO OPERATE VALVES like the *sure grip* they get on an O-B handwheel—find it's contoured to fingers, safely non-heating and won't slip under wet or greasy grasp! Just one of many advance-planned features you get by standardizing on the complete O-B bronze valve line. Ask your distributor for the valve in the orange-and-black box.

OHIO BRASS COMPANY • Mansfield, Ohio

O·B VALVES

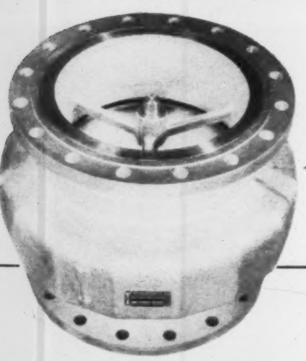
HOLAN

10073-V

MILLER *STREAMFLOW*

CHECK VALVES . . .

a size and style
for every job



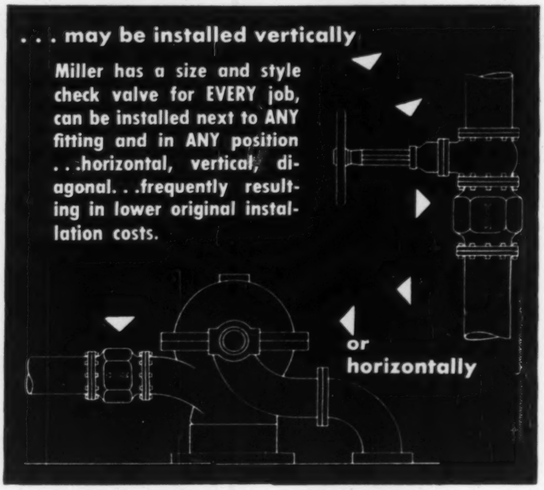
Simplicity in design • trouble free

- **MINIMUM PRESSURE LOSS**
  Miller Check Valves afford minimum pressure loss due to the very specially designed disc and VENTURI design at outlet.
- **SHOCK-PROOF**
  Miller valves are Shock-Proof and entirely silent in operation. Completely eliminate "water hammer", water back-flashing or turbulence, giving longer, trouble-free life to the entire piping installation.
- **FULL FLOW**
  Exclusive with Miller is WIDE opening . . . allowing the very maximum in full flow through the valve. A specially designed conical shaped spring allows the opening of the disc to the fullest point found in any check valve.
- **GREATER AREA**
  Our product research engineers have found the octagonal shaped valve offers the greatest internal area and actually decreases weight. Greater internal area in the valve, results in better efficiency and longer life.
- **OPERATION**
  Miller valves are so designed that the disc travels 1/4 inch per inch of nominal pipe size when fully opened, thereby allowing full flow. Valve bodies are hydrostatically tested to pressure exceeding 4 to 1 safety factor. Miller Center Guided Check Valves have only FOUR parts: the body, the seat ring, the specially designed conical spring and the streamlined center guided disc. Thus, no internal screws or bolts to corrode in place, or work loose to cause costly damage.

...and proved in operation on these exacting installations

Armco, Middletown, Ohio, Butler, Pa. • Austin Company, Cleveland, Ohio • Bakelite Company, Boundbrook, N. J. • Bethlehem Steel Corporation • Buensod-Stacey Company, Charlotte, N. Carolina • Dravo Corporation, Pittsburgh, Pa. • Ford Motor Company—Engine Plant, Cleveland, Ohio • Pittsburgh Plate Glass Co. • H. K. Porter Building, Pittsburgh, Pa. • Scott Paper Company, Everett, Wash. • Standard Oil Co., Jamestown, North Dakota • U. S. Steel Corporation • Western Electric Company, Pomona, N. C.

All of these nationally-known firms are famous for excellence in their particular fields, thus, it is no surprise to find that Miller Center Guided Check Valves are specified for dependability at their various installations. It will pay you well to investigate further.



. . . may be installed vertically

Miller has a size and style check valve for EVERY job, can be installed next to ANY fitting and in ANY position . . .horizontal, vertical, diagonal. . .frequently resulting in lower original installation costs.

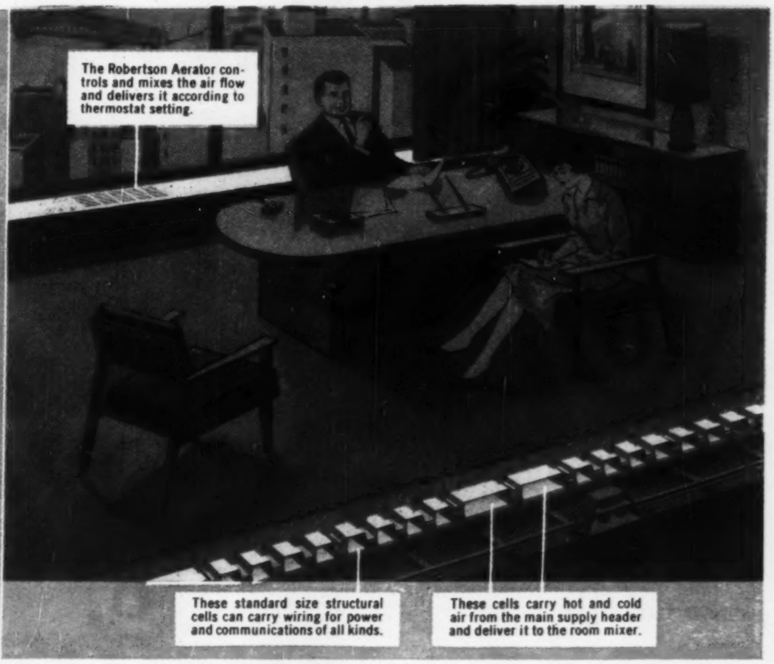
or horizontally

WRITE US TODAY FOR DESCRIPTIVE LITERATURE

miller
VALVE COMPANY, INC.

1620 PENNSYLVANIA AVE. • PITTSBURGH, PA.

Cut Capital And Annual Costs With



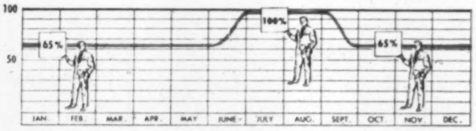
The Robertson Aerator controls and mixes the air flow and delivers it according to thermostat setting.

These standard size structural cells can carry wiring for power and communications of all kinds.

These cells carry hot and cold air from the main supply header and deliver it to the room mixer.

Robertson Q-Air Floor system

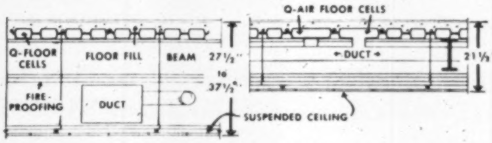
. . . increase air conditioning efficiency and save construction money



During the winter, Robertson Aerators satisfy heating requirements at 65% of peak volume.

For peak summer cooling, aerators deliver 100% volume and system runs at full power.

As cold weather approaches, changeover device adjusts system back to 65% of peak volume.



Simplified cross sections of ceiling-to-floor-above areas show old way left and Q-Air Floor right. Average compaction is one foot.

Basically, Q-Air Floor is an outgrowth of Robertson Q-Floor, the quarter-century-old cellular steel subflooring system which provides quick, efficient construction and continuous wiring raceways in more than 15,000 buildings. Within its own thickness, and without disturbing the 2-foot module of standard Q-Floor, the new system provides pairs of wide structural cells for use in connection with dual-duct, high-velocity air conditioning. These load-bearing cells are adapted by the air conditioning contractor to transport air from horizontal supply ducts to mixing units for discharge into the room.

The advantages of Q-Air Floor are threefold. The system includes the exclusive and patented Robertson Aerator, a mixing device with a seasonal changeover feature which keeps blower power at 65% of capacity except during peak summer load. Yearly power cost can be reduced as much as 30%. Since Q-Air Floor saves an average of a foot in depth per floor section, as much as 5% in building material cost can be saved—depending on the rise of the building. And this compaction inevitably results in up to an 11% reduction in overall BTU requirements.

Robertson

Q-AIR Floor

H. H. Robertson Company

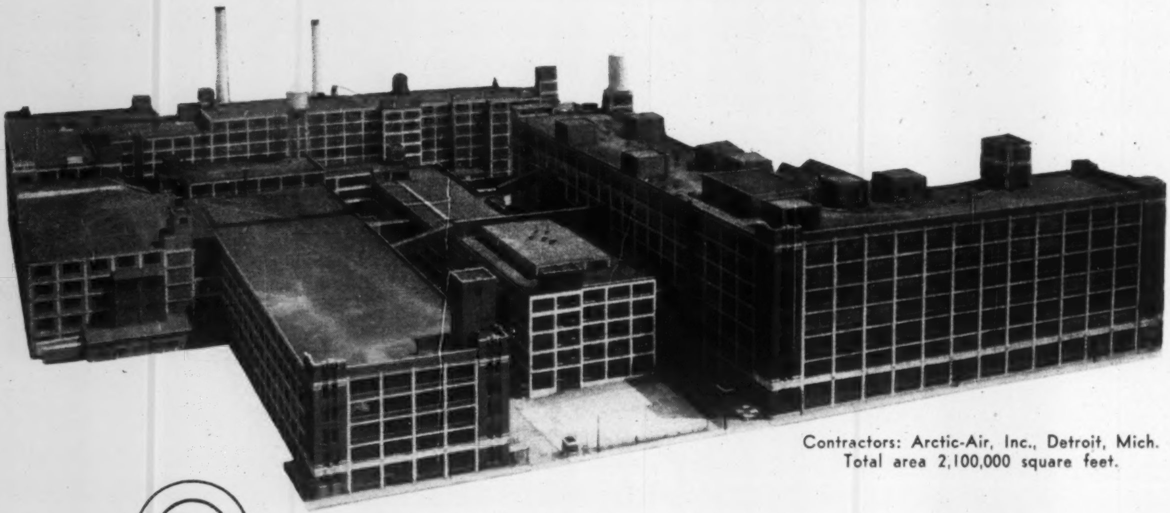
2416 Farmers Bank Building, Pittsburgh 22, Pa.

In England—Robertson Thain Ltd., Ellesmere Port, Cheshire
In Canada—Robertson-Irwin Ltd., Hamilton, Ontario • Edmonton, Alberta

Use the coupon for further information about this revolutionary system—already in successful use in a number of splendid buildings.

NAME____________________TITLE__________
COMPANY______________________________
ADDRESS______________________________
CITY____________________STATE__________

IN DETROIT'S
RUSSELL INDUSTRIAL CENTER



Contractors: Arctic-Air, Inc., Detroit, Mich.
Total area 2,100,000 square feet.

UNDERWRITERS (UL) LISTED

arkos

Direct-Fired Heaters

SAVE $140,000

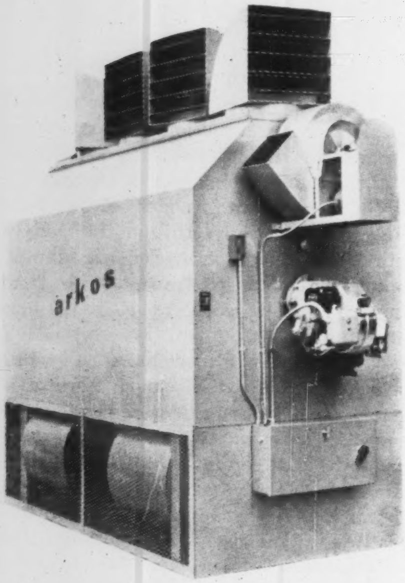
ANNUALLY BY REPLACEMENT OF FOUR EXISTING HIGH PRESSURE BOILERS

When the Russell Industrial Center, Owned by Helmsley-Spear, Inc. one of the world's largest building management firms, modernized their facilities, they installed a completely new heating system utilizing ARKOS Direct-fired Heaters. 89 Arkos Heaters — ranging in capacities from 400,000 to 3,500,000 Btu output each — resulted in reduced maintenance costs, lower operating expenses and higher efficiencies.

On modernization of existing heating systems, and for new construction, it will pay you to investigate ARKOS for quality engineering . . . performance . . . and high efficiency.

Our engineering department will be pleased to work with your Consulting Engineers or your engineers regarding your specific requirements.

Be sure to see the ARKOS line, Booths 108-110, International Heating & Air Conditioning Exposition in Chicago.



ARKOS Heaters provide dependable yet inexpensive means of heating plants, warehouses, enclosed docks, churches, schools, and are suitable for space heating, make-up air, and drying applications. Available for gas, oil or combination fuels and for floor, horizontal and inverted mountings.

WRITE FOR BULLETIN 501A

arkos
MANUFACTURING COMPANY
Division of Arnold A. Kosarin & Associates, Inc.
7310 WOODWARD AVENUE, DETROIT 2, MICHIGAN

Here's AAF's newest air filter!

You've got to see it to believe it ...and you can see it at the show

How is it possible for two of these new air filters to provide 2,000 cfm per cell yet ship in a carton that's 24" x 24" and only 8" deep?

How is it possible for a frame design to provide positive air seal, require only 4" depth, and permit servicing from either the clean air or dirty air side?

How can a filter provide 95 sq. feet of net media area exposed to the air stream yet require no media supporting structure?

The answers to these questions are embodied in the unique design of this newest air filter from AAF—the company that revolutionized commercial air cleaning with the amazing Roll-O-Matic, and more recently, the electrostatic Rollotron.

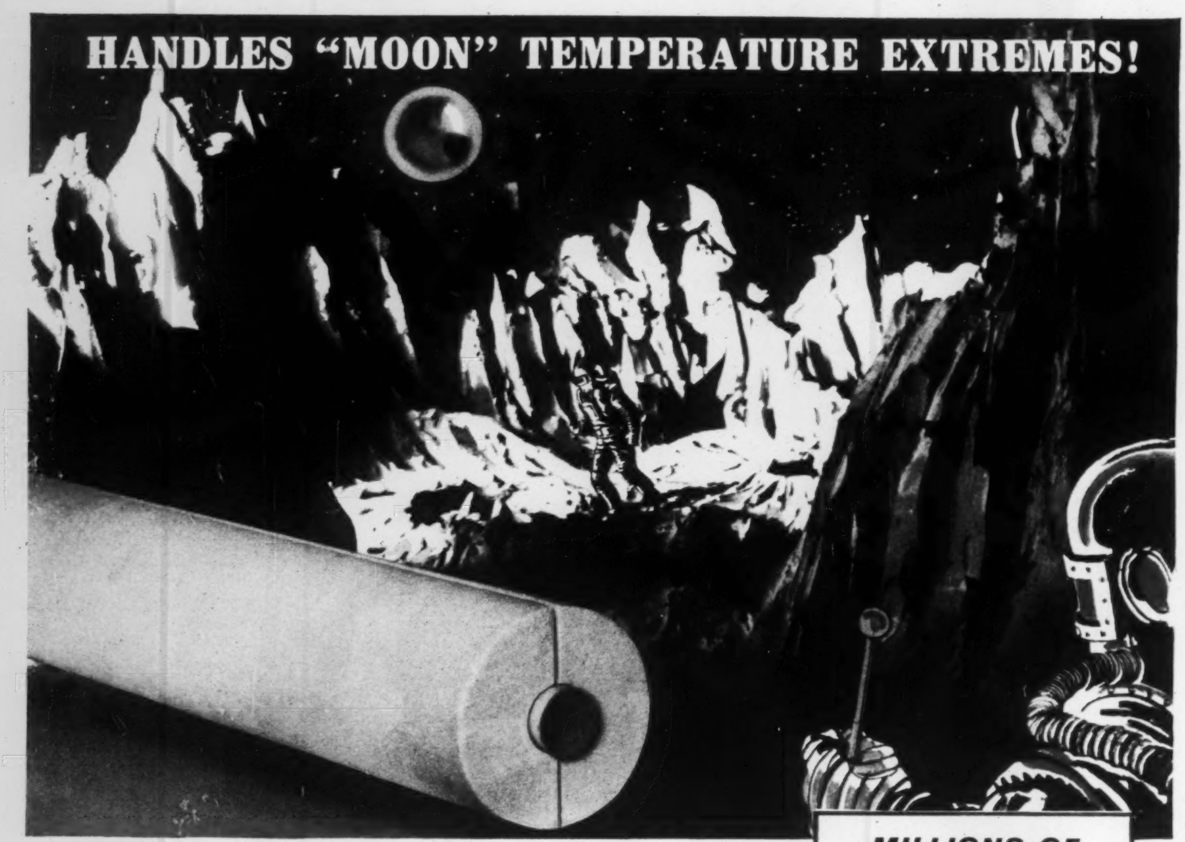
This new unit combines high efficiency, low resistance, large dust-holding capacity and compactness to a degree never approached by any dry-type filter.

You *really do* have to see this newest AAF air filter to believe it. See it in operation and get all the facts at the American Air Filter booth in Chicago.

AAF **American Air Filter**

BETTER AIR IS OUR BUSINESS

HANDLES "MOON" TEMPERATURE EXTREMES!



MILLIONS OF CLOSED CELLS MAKE U-200

- **Waterproof**
- **Vapor Resistant**
- **Efficient**
- **Lightweight**
- **Easy to Handle**

*Closed cell content of 85% plus.

New low temperature insulation handles jobs in − 300° F. to + 220° F. range

Of course, this new Unarco U200 insulation is not in use on the moon . . . but it could be, because it handles temperature extremes even greater than would be required on this bleak island in space.* What's more U200 does it without thermal shock effects anywhere along the line.

A new, extremely lightweight, closed cell synthetic, U200 has excellent heat and chemical resistance. Its K factor is only 0.14 at 70° F. mean temperature . . . lowest on the market. Density is only 2.3 lb. per cubic foot. Yet this remarkable, new material has high compressive and flexural strength. It's non-toxic and easy to handle, too.

Try it just once and you'll see how quickly and easily it can be cut and applied with a very minimum of standard hand tools. It can actually reduce application costs by as much as 50%.

Available in accurate, half-round sections; in nominal thicknesses and in standard pipe sizes. Individual sections 36 inches long. Also available in 12" x 36" block form—1" to 5" thickness in ½" increments.

(*) *−243° F. to +214° F. Estimated moon temperatures as listed in a leading American encyclopedia.*

Get complete engineering specifications and other details before another day goes by.
Write today on your company letterhead for Unarco Bulletin No. U200-1.

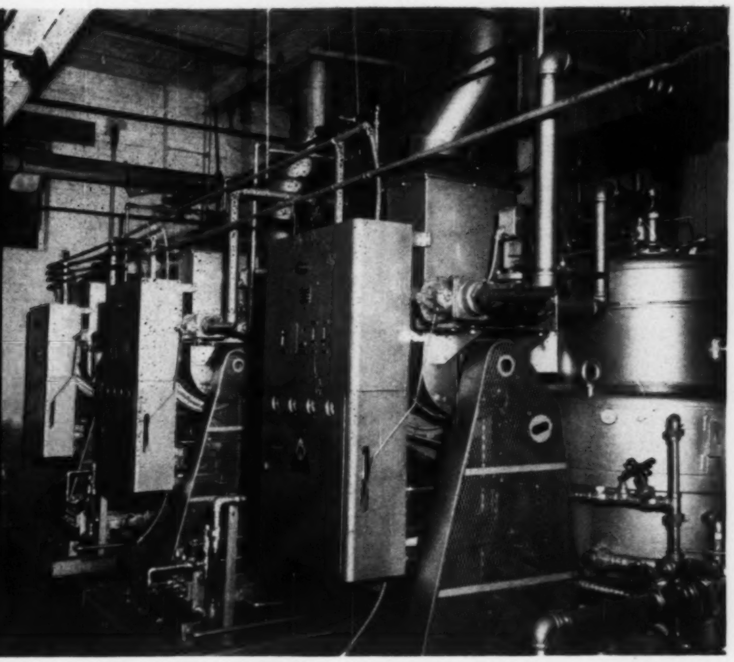
U-200
The insulation with "Handleability"
POLYURETHANE FOAM

UNARCO®

UNARCO PRODUCTS
• UNIBESTOS, Amosite Asbestos Pipe Covering and Block • Calcium Silicate Pipe Covering and Block • 85% Magnesia Pipe Covering and Block • Mineral Fiber Block • Wrap-On Insulation • Lace-On Insulation • Turbine Blankets • Insulating and Finishing Cements • Asbestos Textiles • Packing and Gasketing.

UNION ASBESTOS & RUBBER COMPANY
Fibrous Products Division • **Dept. 303, Bloomington, Illinois.**

GEUDER, PAESCHKE & FREY COMPANY SLASHED $30,000 OFF ANNUAL STEAM COSTS WITH 4 NEW VAPOR MODULATICS



"efficiency and flexibility were low . . . yet our boilers were costing us $77,000 a year"

Geuder, Paeschke & Frey is an 80-year-old Milwaukee metal fabricating firm. For years, they had employed two heavy oil-fired fire tube boilers (original cap. 500 bhp) to heat 603,000 sq. ft. of plant and office area and supply steam to six 1150 gal. metal "pickling" tanks.

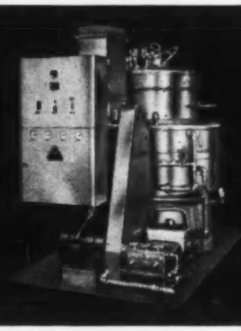
Increasing operational inefficiency, chronic line loss (due to old plant boiler room situated 500 ft. from present manufacturing area), plus slow start-up time and attendant labor costs called for replacement of their costly, time-worn units.

Mr. L. C. McKay, Vice President and Chief Engineer, decided on *four* new Vapor Modulatic Water Tube Boilers! In his own words, here's why:

"With four boilers instead of two, a greater degree of flexibility is possible. During the summer months, for instance, only two Vapor 160 bhp boilers are required, giving us much more economical steam production than formerly.

"Because the Vapor units are about one-fifth the size of conventional boilers of the same rating, we were able to locate them in a compact 20 by 36 ft. room in the main building near the center of the load and eliminate the line loss.

"The operating cost of the Vapor boilers in comparison to the old equipment should result in sufficient savings to pay for the new installation in about five years."



• Compact • Efficient • Economical

VAPOR MODULĀTIC WATER TUBE BOILERS
for processing, power, heating

Delivered fully assembled. Can be installed in hours—in spaces too small for ordinary boilers. No special foundation or stacks needed. Delivers full steam in five minutes from cold start.

BRIEF SPECIFICATIONS

Sizes	18 to 200 bhp	Height (150 hp)	6 ft. 10 in.
Pressures	5 to 900 psi	Floor Load (max.)	150 lb./sq. ft.
Fuel	Oil, Gas, or Combination	Operation	Automatic
Floor Area (150 hp)	5 ft. x 8 ft.		

Send coupon for free literature.

VAPOR

BHP REQUIRED__________
SAFETY VALVE SETTING__________
MINIMUM STEAM LOAD__________
MAX. STEAM LOAD__________
STEAM PRESSURE__________
TYPE OF FUEL__________

VAPOR HEATING CORPORATION,
80 E. Jackson Blvd., Chicago 4, Ill. Dept. 21-A

Please rush me your free bulletins on Modulātic Water Tube Boilers.

NAME__________
TITLE__________
FIRM__________
ADDRESS__________
CITY, ZONE, STATE__________

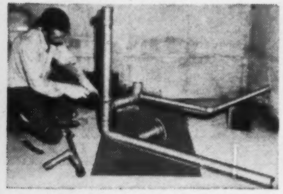
LIGHTWEIGHT COPPER TUBE IS EASY TO INSTALL. Only *one fourth* the weight of ferrous materials—one man lifted and connected this long length of 6-inch copper drainage tube. Overhead work is easier with Anaconda copper tube—no heavy equipment for threading or caulking. In close quarters, copper tube and solder-joint fittings make light work out of tight work. Use this lightweight modern drainage tube—Anaconda copper tube—for your next drainage installation. For more information on copper tube, write: Anaconda American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont. 5902L

ANACONDA

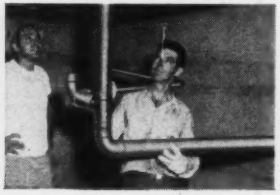
COPPER TUBE AND FITTINGS for soil, waste and vent lines
Available through plumbing wholesalers. Products of Anaconda American Brass Company

Longer Lengths—Fewer Joints

Preassembly—Saves Time



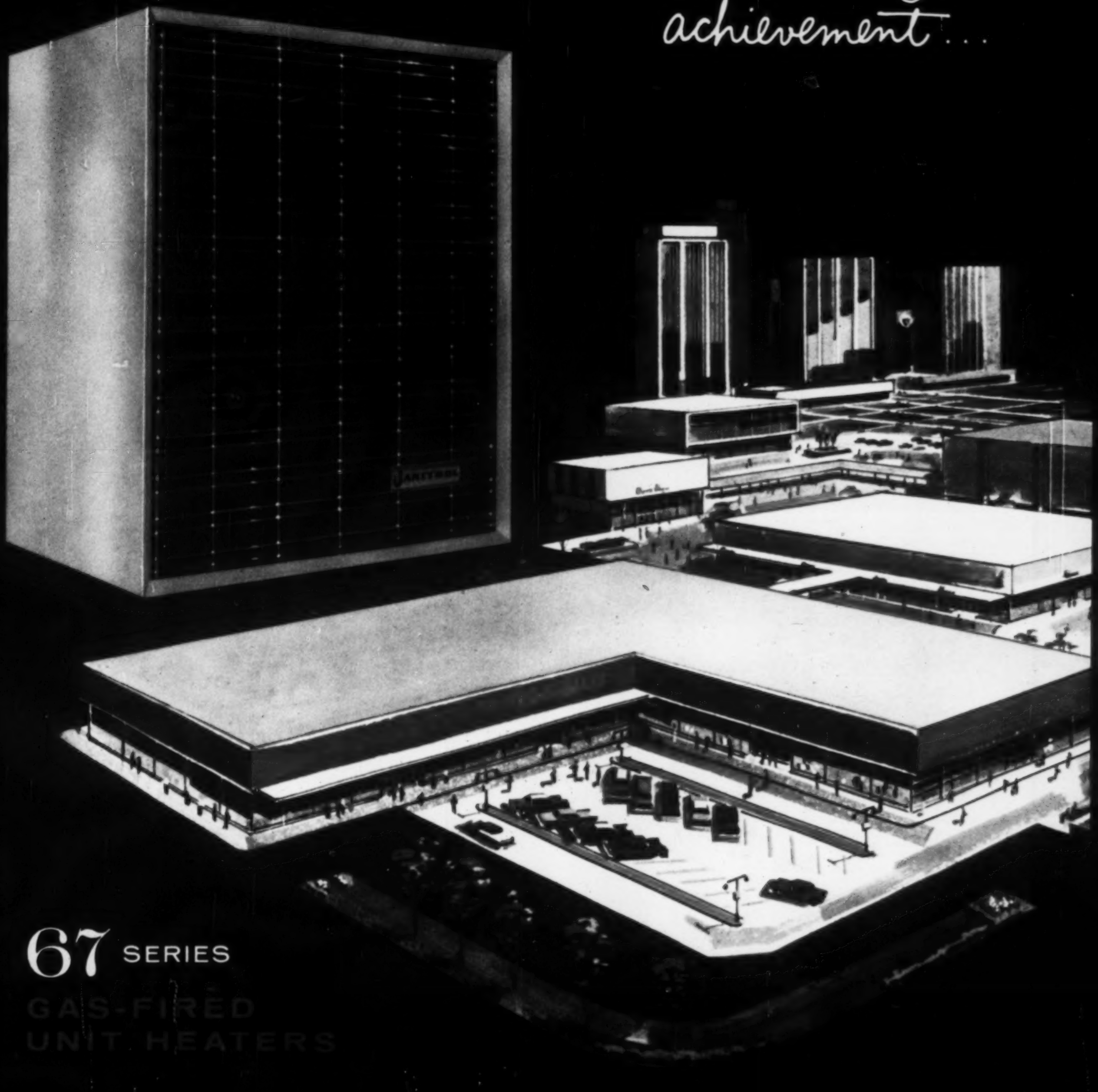
Lightweight Copper—Easier Installation



Compact Connections—Save Space

JANITROL

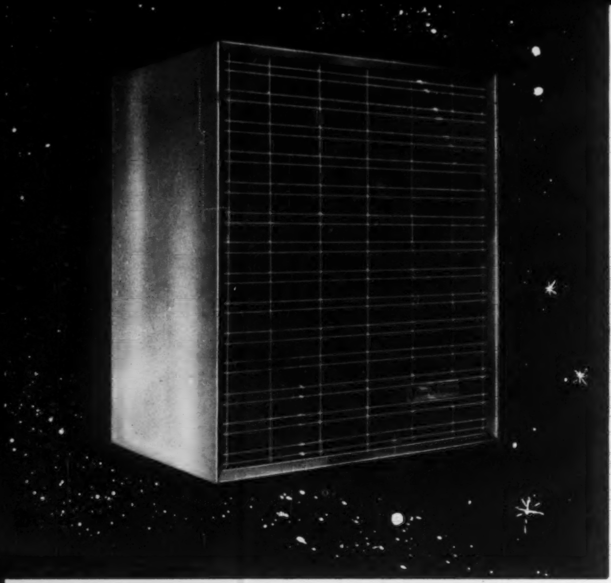
presents a dramatically new achievement...



67 SERIES

GAS-FIRED UNIT HEATERS

UNPRECEDENTED STYLING, PERFORMANCE AND DURABILITY TO MEET THE MODERN TREND IN ARCHITECTURAL DESIGN



provide the ultimate in quality and economy

new JANITROL GAS-FIRED

commercial & industrial heating equipment

ALL NEW! JANITROL 67 SERIES UNIT HEATERS FEATURING. . . STELLAR NEW STYLING, PERFORMANCE AND DURABILITY!

New Janitrol 67 Series Unit Heaters are unusually handsome . . . incredibly quiet and efficient. They bring you, for the first time in unit heater history, distinctive appearance you can recommend for the smartest business setting. And they offer in even greater measure the traditional Janitrol quality and dependability in heating.

Their clean, crisp "look" is a departure from the crude, cumbersome industrial appearance of yesterday. Modern machine tools, trucks and structures have evolved as attractive, functional designs. And now, Janitrol sets the pace in unit heater styling!

The draft hood opening and adjustable louvers are concealed by the beautifully styled gold-tone grille. The rear combustion air inlet permits use of a solid bottom panel . . . eliminates any possibility of obstruction to combustion air intake.

Inside, design progress is equally significant. Yet every part is proven . . . every safety feature is included. Result? Performance no other unit heater can duplicate.

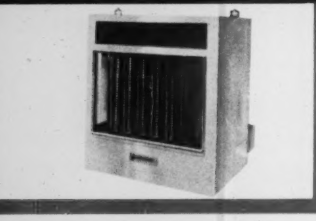
Naturally, the "heating heart" of every new Janitrol is the famous Janitrol Multi-Thermex heat exchanger with this unchallenged record for durability and low maintenance: among nearly three million heat exchanger tubes produced since 1940, replacements for all causes have run less than ¼ of 1%.

Investigate the many exclusive advantages of Janitrol 67 Series Unit Heaters for jobs you specify or install. Let them help build your reputation for quality.

FEATURES THAT MAKE ALL OTHER UNIT HEATERS OLD-FASHIONED!

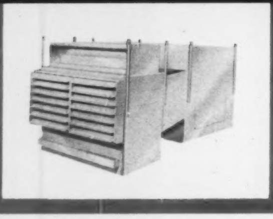
New "sheer look" styling—Beautiful Phoenix Beige finish • New gold-tone grille. Conceals louvers and draft hood opening • Low overall height • Automatic controls—Fully accessible • Factory-fired • Low Voltage Gas Controls—Standard • Low Voltage Sensitive Thermostat—Standard • Limit control—interrupts control circuits and shuts off fuel if unit temperature becomes excessive • Thermopilot Shut-off. Shuts off all gas, including pilot, in event of pilot flame failure • Automatic Pilot. Exclusive Janitrol low Btu. non-linting design • Quiet air delivery. Acceptable for schools and other applications where conventional units are too noisy • Motor prelubricated for 5 years • Built-in Draft Hood. Removable, provides full access to heat exchanger. Protects burners from abnormal up or down draft • Combustion air inlet. At bottom rear, through control enclosure. Controls constantly cooled by combustion air stream. Eliminates cross draft on burners • Ampli-Fire Ribbon Flame Burners. No flame contact on metal. Removable, with non-linting air shutters featuring thumb-screw adjustment.

MEET EVERY COMMERCIAL AND INDUSTRIAL HEATING NEED FROM JANITROL'S BROAD LINE



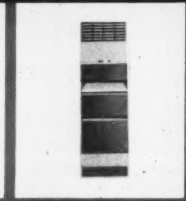
GAS-FIRED DUCT-FURNACES

Install in a duct where air is circulated by separate blower. Adaptable for use with cooling. Two sizes: 200,000 and 300,000 Btu/hr. input—may be combined to provide capacity from 200,000 Btu/hr. up, in increments of 100,000 Btu/hr. input. Six sizes, from 50,000 to 225,000 Btu/hr. in Duct 55 models.



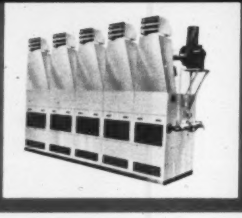
BLOWER-TYPE UNIT HEATER

Allows air delivery from greater heights and against greater static pressures. Models with exposed or enclosed blowers. A.G.A. approved as low and high static-type blower unit heater for air delivery to duct system up to 1.0 in. W.C. external static. Heat sections factory assembled. Sizes: 300,000, 400,000 and 500,000 Btu/hr. input.



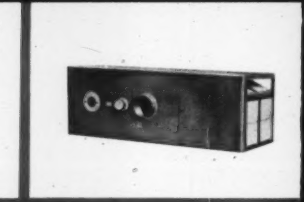
FLOOR-TYPE UNIT HEATER

Cold air drawn from floor level is heated, filtered and discharged horizontally overhead. Quiet, clean, carefree—ideal for offices, restaurants, stores, labs, etc., requiring a compact unit.



HEAVY DUTY BLOWER HEATERS

For unit heating, central heating and air conditioning. Wide range of standard blowers and motors assures correct air delivery and temperature rise in each application. Factory assembled and tested. Capacities from 250,000 Btu to 1,750,000 Btu/hr. input.



HORIZONTAL OIL UNIT HEATER

For suspension overhead. Saves floor space. Compact, efficient, low-maintenance design clean and quiet in operation. May also be used to feed duct system. Choice of sizes from 84,000 to 250,000 Btu/hr. output to meet all needs.

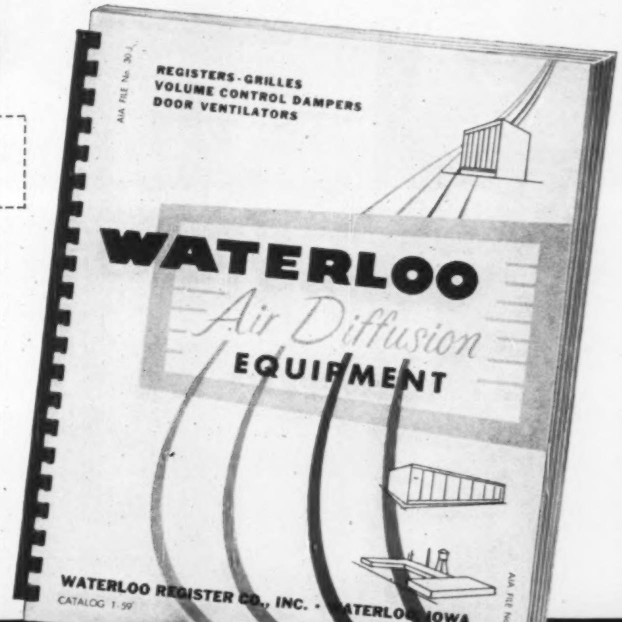
helpful data for
ARCHITECTS, CONTRACTORS AND ENGINEERS
write collect today for complete information on Janitrol units for heating with clean, economical gas in buildings of every type. There's no obligation.

JANITROL
HEATING AND AIR CONDITIONING
A Division of Midland-Ross Corporation
Columbus 16, Ohio • In Canada: Moffats Ltd., Toronto 15
Also Makers of Surface Industrial Furnaces, Kathabar Humidity Conditioning, Janitrol Residential Heating and Cooling Equipment.

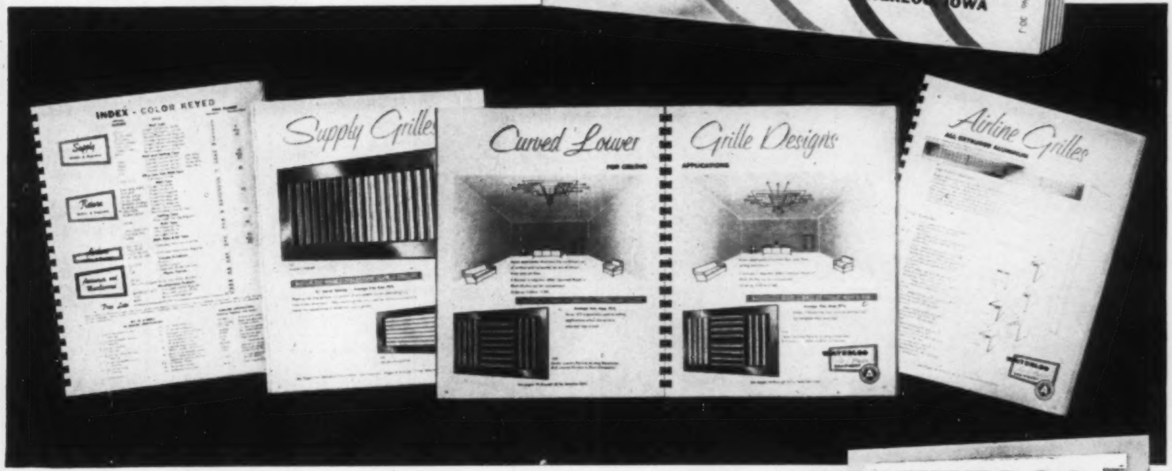
The Producers' Council of
THE AMERICAN INSTITUTE OF ARCHITECTS
*awards** Certificate of Merit *to*

WATERLOO CATALOG

*Presented at the A.I.A. Convention
in San Francisco on April 18, 1960


AIA FILE No. 30-J
REGISTERS - GRILLES
VOLUME CONTROL DAMPERS
DOOR VENTILATORS
WATERLOO
Air Diffusion
EQUIPMENT
WATERLOO REGISTER CO., INC. • WATERLOO, IOWA
CATALOG 1-59

The Producers' Council, Inc. of Washington, D.C. has awarded a Certificate of Merit in the 1960 Building Products Literature Competition to a comprehensive air diffusion equipment catalog published by Waterloo Register Co., Inc. The Award was made for "an outstanding effort in the production of informative, high quality product literature."


INDEX - COLOR KEYED
Supply Grilles
Curved Louver
Grille Designs
Airline Grilles

Write for your free copy of this comprehensive guide to the quality-built Waterloo line.

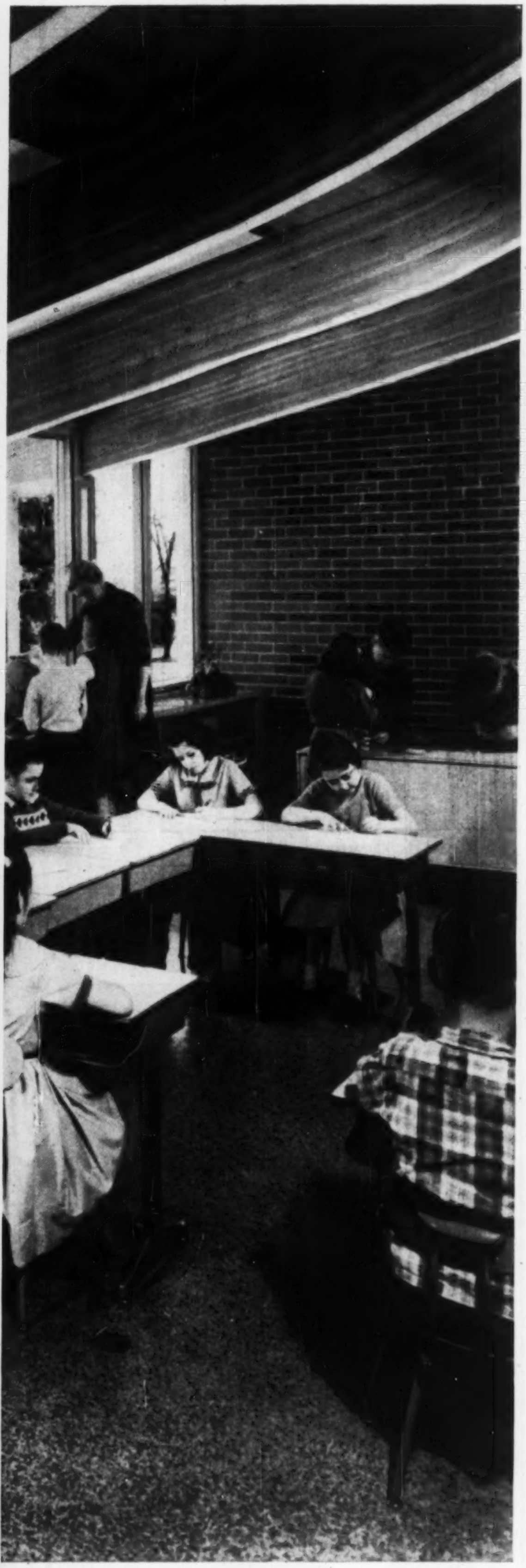
WATERLOO REGISTER COMPANY, INC.
P.O. BOX 72, WATERLOO, IOWA

WATERLOO
Air Diffusion
EQUIPMENT

A

WR120

LENNOX



The Lennox Living Laboratory: This $50,000 school has been built by Lennox Industries, Inc. in Des Moines, Iowa to carry on research in the field of school classroom heating, ventilating and air conditioning. Extensive research and testing is carried on continuously, both with and without students present in the classrooms.

GAS *and* **LENNOX** *can*

provide your schools with the finest in fresh air heating and ventilating...

at lower operating and building costs

This new Gas system automatically draws in fresh air from outside . . . warms, cleans, and circulates air quietly and evenly throughout the school.

It's hard to believe, yet 65¢ per square foot was the complete cost of installing a Gas-fired Lennox Comfort Curtain System in the Potosi, Missouri, High School – including automatic controls, ductwork, labor – everything.

This is unusually low, even for the Comfort Curtain, but costs of $1.03 in Indiana; $1.15 in Montana; and $1.12 in South Dakota were *usual and typical* of the amazing savings offered by a Lennox Comfort Curtain System using Gas.

Money saving, safe Gas units are being installed in thousands of schools across the country. If you have specific questions, your local Gas company or a Lennox specialist – or both – will be available to assist the architects and engineers to illustrate how this equipment can best be applied to any specific school plan. Check the facts about Gas and you'll see – modern Gas heating out-performs all other fuels.

Call your local Gas company or write to Lennox Industries, Inc., 1701 East Euclid Ave., Des Moines 5, Iowa. *American Gas Association.*

WHEATLAND STEEL PIPE

WHEATLAND-USA-60

BLACK and GALVANIZED

...pipe with the yearmark!

WHEATLAND TUBE CO., Bankers Securities Bldg., Phila. 7, Pa. • Mill: Wheatland, Pa.

Steel

Nominal Dimensions and Weights of Steel Pipe

Nominal Size (In.)	Outside Diam. (In.)	STANDARD PIPE				EXTRA STRONG PIPE			DOUBLE EXTRA STRONG PIPE			Outside Diam. (In.)	Nominal Size (In.)
		Inside Diam. (In.)	Wall Thick-ness (In.)	Wt. per Ft. (Lbs.)		Inside Diam. (In.)	Wall Thick-ness (In.)	Wt. per Foot (Lbs.)	Inside Diam. (In.)	Wall Thick-ness (In.)	Wt. per Foot (Lbs.)		
				Plain End	Thds. & Cplgs.								
⅛	.405	.269	.068	.25	.25	.215	.095	.32	—	—	—	.405	⅛
¼	.540	.364	.088	.43	.43	.302	.119	.54	—	—	—	.540	¼
⅜	.675	.493	.091	.57	.57	.423	.126	.74	—	—	—	.675	⅜
½	.840	.622	.109	.85	.85	.546	.147	1.09	.252	.294	1.71	.840	½
¾	1.050	.824	.113	1.13	1.14	.742	.154	1.47	.434	.308	2.44	1.050	¾
1	1.315	1.049	.133	1.68	1.69	.957	.179	2.17	.599	.358	3.66	1.315	1
1¼	1.660	1.380	.140	2.27	2.28	1.278	.191	3.00	.896	.382	5.21	1.660	1¼
1½	1.900	1.610	.145	2.72	2.73	1.500	.200	3.63	1.100	.400	6.41	1.900	1½
2	2.375	2.067	.154	3.65	3.67	1.937	.219	5.04	1.503	.436	9.03	2.375	2
2½	2.875	2.469	.203	5.79	5.82	2.323	.276	7.66	1.771	.552	13.69	2.875	2½
3	3.500	3.068	.216	7.58	7.62	2.900	.300	10.25	2.300	.600	18.58	3.500	3
3½	4.000	3.548	.226	9.11	9.20	3.364	.318	12.50	—	—	—	4.000	3½
4	4.500	4.026	.237	10.79	10.89	3.826	.337	14.98	3.152	.674	27.54	4.500	4
5	5.563	5.047	.258	14.62	14.81	4.813	.375	20.78	4.063	.750	38.55	5.563	5
6	6.625	6.065	.280	18.98	19.19	5.761	.432	28.57	4.897	.864	53.16	6.625	6
8	8.625	8.071	.277	24.70	25.00	7.625	.500	43.40	6.875	.875	72.42	8.625	8
8	8.625	7.981	.322	28.56	28.81	—	—	—	—	—	—	8.625	8
10	10.750	10.136	.307	34.25	35.00	9.750	.500	54.74	—	—	—	10.750	10
10	10.750	10.020	.365	40.49	41.13	—	—	—	—	—	—	10.750	10
12	12.750	12.090	.330	43.78	45.00	11.750	.500	65.42	—	—	—	12.750	12
12	12.750	12.000	.375	49.56	50.71	—	—	—	—	—	—	12.750	12
Permissible Variations				Over	Under	Over	Under			Over		Under	
Weight				5%	5%	5%	5%			10%		10%	
Outside Diameter ⅛" to 1½"				1/64"	1/32"	1/64"	1/32"			1/64"		1/32"	
2" and larger				1%	1%	1%	1%			1%		1%	
Wall Thickness				—	12.5%	—	12.5%			—		12.5%	

ALSO AVAILABLE: FENCE AND STRUCTURAL PIPE

WHEATLAND STEEL COUPLINGS

BLACK and GALVANIZED

Conveniently Cartoned

WHEATLAND STEEL PRODUCTS CO.

Bankers Securities Bldg., Philadelphia 7, Pa.
Mill: Wheatland, Pa.

OTHER TYPES OF COUPLINGS ALSO AVAILABLE, SUCH AS:

- AAR
- CASING
- CONDUIT
- DRIVE PIPE
- EXTERNAL UPSET TUBING
- EXTRA HEAVY
- HYDRAULIC
- LINE PIPE—API
- NON UPSET TUBING
- RIGHT AND LEFT
- SHALLOW WELL
- TUBING
- WATER WELL CASING
- WATER WELL REAMED AND DRIFTED

STANDARD MERCHANT COUPLINGS
AISI SPECIFICATIONS

Nominal Size (In.)	Outside Diam. (In.)	Length (In.)	Threads per Inch	Approx. Weight Lbs. per 100 pieces	Carton Contents
⅛	.563	13/16	27	3	100
¼	.719	1 3/16	18	7	100
⅜	.875	1 3/16	18	9	100
½	1.063	1 9/16	14	17	100
¾	1.313	1⅝	14	26	50
1	1.576	2	11½	40	30
1¼	1.900	2 1/16	11½	48	25
1½	2.200	2 1/16	11½	67	25
2	2.750	2⅛	11½	105	20
2½	3.250	3⅛	8	209	—
3	4.000	3¼	8	335	—
3½	4.625	3⅜	8	482	—
4	5.000	3½	8	461	—
5	6.296	3¾	8	852	—
6	7.390	4	8	1127	—

STANDARD HALF COUPLINGS

Nominal Size (In.)	Outside Diam. (In.)	Length (In.)	Threads per Inch	Approx. Weight Lbs. per 100 pieces	Carton Contents
⅛	.563	11/32	27	1.5	100
¼	.719	17/32	18	3.5	100
⅜	.875	17/32	18	5	100
½	1.063	23/32	14	8	75
¾	1.313	¾	14	12	50
1	1.576	15/16	11½	18	25
1¼	1.900	31/32	11½	23	25
1½	2.200	31/32	11½	32	20
2	2.750	1	11½	47	15
2½	3.250	1½	8	96	—
3	4.000	1 9/16	8	160	—
3½	4.625	1⅝	8	222	—
4	5.000	1 11/16	8	211	—
5	6.296	1 13/16	8	380	—
6	7.390	1 15/16	8	528	—

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55 cfm to 13,171 cfm
free air to 4" s.p.
direct-connected or belt-driven
Certified Ratings

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- quiet operation
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- weatherproof scroll design
- ruggedly built
- low silhouette

direct-connected: 55 cfm to 13,171 cfm
belt-driven: 150 cfm to 65,000 cfm
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1700 cfm to more than 40,000 cfm

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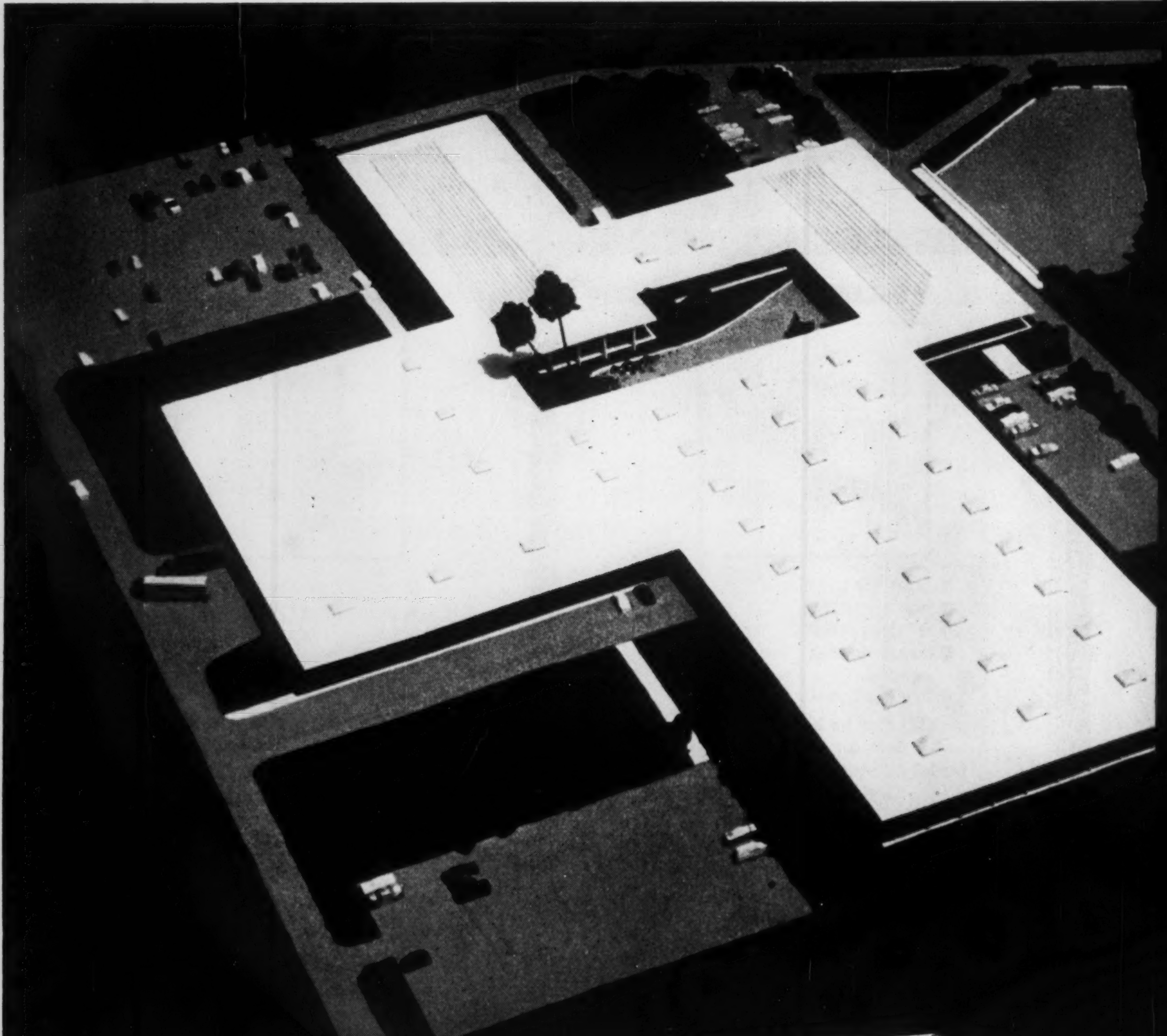
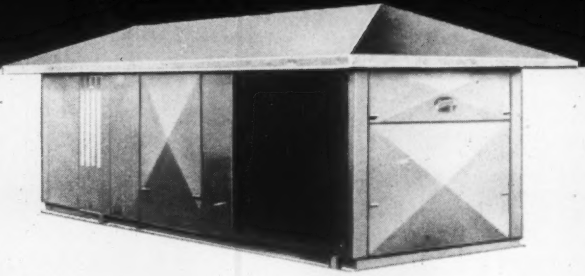


Architect: Malcolm B. Wells, Merchantville, N. J.
Consulting Engineer: Arthur Parker Assoc., Moorestown, N. J.



NOTE HOW CLEVERLY THE ARCHITECT has made the unobtrusive Atmos-Pak units even less noticeable by adding a hip roof to each unit to match the buildings' architectural features. Painted beige, they conform to the color scheme of the group.

The roof-mounted technique, primarily for cooling and/or heating new one-story buildings, can be used in existing structures of various types. It can be modified to perform the functions of any conventional system.

There's always room at the top for the original low silhouette.

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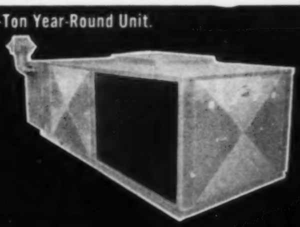
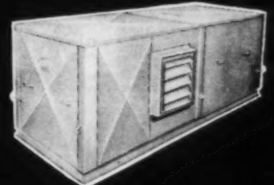
Patent No. 2886955

ROOF-MOUNTED ATMOS-PAK® GIVES RCA PLANT HEATING & COOLING EFFICIENCY, SPACE, BEAUTY!

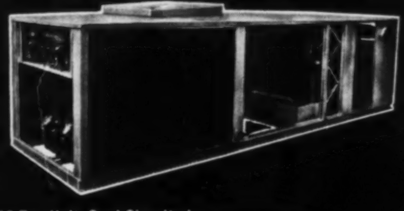
15 & 20-Ton Year-Round Unit.



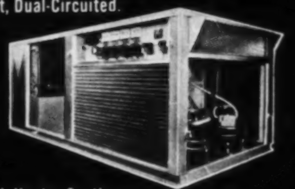
5, 7½, 10-Ton, Single-Circuited Unit.



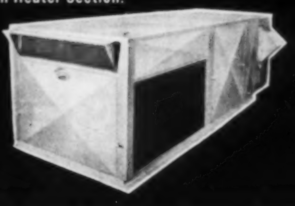
10, 15, 20-Ton Year-Round Unit.



10-Ton Unit, Dual-Circuited.



10-Ton, with Heater Section.



All Atmos-Pak Models are complete ONE-PIECE units, ready for installation and immediate operation.

New Model Computer Plant in Palm Beach Gardens, Fla., Installs Versatile Units

Everything that went into the model new $4,000,000 RCA Electronic Computer Plant was carefully chosen, painstakingly scrutinized by architect and engineer. It had to be best in its field. So with pride, Air Conditioning Inc. announces the inclusion of 58 Atmos-Pak units comprising 1000 tons capacity to satisfy all requirements and to meet the RCA architects' and engineers' standards for an efficient and attractive building group.

Speed of installation was essential. Pre-fabricated Atmos-Pak, needing only three connections on-site, speeds occupancy. Valuable space is gained at no extra cost by eliminating boiler and apparatus rooms. Air cooling makes water towers, evaporative condensers, miles of pipe, and other appurtenances unnecessary. Ducts are eliminated by the supply and return air distribution chamber. Zone control of cooling and heating is easy. Expansion means merely adding more Atmos-Pak units.

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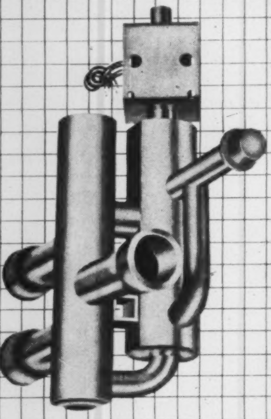
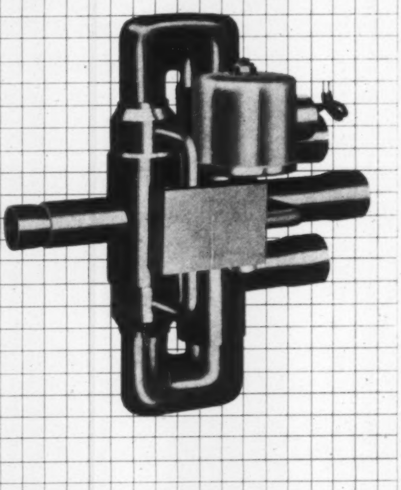
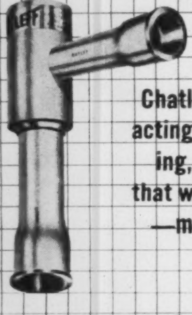


Chatleff is a pioneer in the field of reversing valves. Chatleff valves are constructed of dense uniform brass with Teflon seating; hermetically sealed for immediate, quiet, dependable performance



CHECK VALVES



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CONTROLS INC
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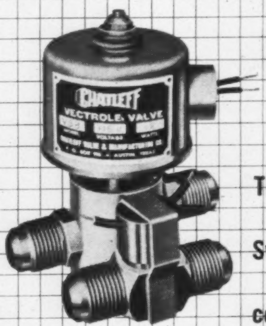

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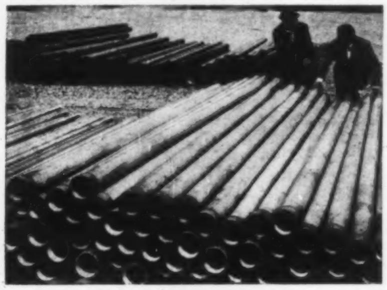
The Chatleff Vectrole system, consisting of the Vectrole Valve, Switching Element and Thermostat, provides independent unit control for hot or chilled water systems at a reasonable price.

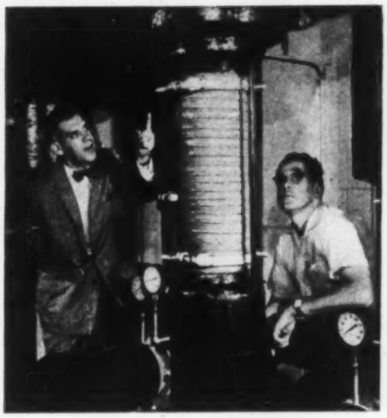
This mark tells you a product is made of modern, dependable Steel

"We have yet to find anything better than our National Tube Distributor's service — their deliveries are faster than anyone else's."

"Our profit margin would go to pot if we couldn't depend on rapid delivery at short notice," said Mr. Arthur L. Lewis, President of Lewis Mechanical Contractors, Inc., Middletown, Pa. "We specialize in contracting for government projects which usually begin on short notice. That's why we buy 95% of our pipe from National Tube. When our distributor, The Bodwell Company, promises a delivery, that's just what we get. They deliver pipe—not excuses.

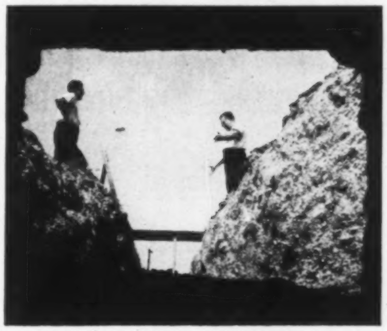
"We were working on a tight schedule on an Air Force Base near here and needed two carloads of





wrapped pipe. Our distributor delivered USS National Pipe on time—in about half the time promised by competitive firms which permitted us to start on schedule. We also know that our National Tube Distributor keeps a large stock of pipe on hand to meet emergencies—we can obtain any size from 1/8 inch to 24 inches.

"Government specifications are rigid but National Tube salesmen and distributors are always ready to help us. We usually call them in to help draw up the order and offer recommendations. Their advice and technical assistance are invaluable.



"We have found USS National Pipe, as delivered on any job, gives us consistent dependability, uniform performance and better fit for welding. This virtually eliminates our fitting problems.

"Our dealing with National Tube and their distributors is like having an extra man on the job. And at no extra cost. We know help is as close as our telephone. We have yet to find better service anywhere.

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Recognizing the growing concern of you and your clients for more economy in total building costs, Owens-Corning has developed a new service to help you quickly and accurately forecast the economic performance of building materials.

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this, it delivers dollars-and-cents answers, and demonstrates quickly the savings possible in heating and cooling costs with optimum amounts of insulation.

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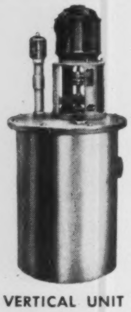
Low NPSH—Smooth, quiet operation • high efficiency • less initial cost and lower operating expense • compactness

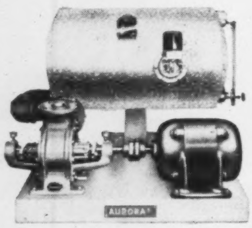
For many years Aurora Centrifugal Pumps and APCO Turbine Type Pumps, and Aurora Condensate Return Units have been serving a broad variety of heating and air conditioning applications with maximum dependability and operating efficiency. Applications include: condenser circulation, boiler feed, cooling towers, air conditioning systems, hot water circulation, and many special operations.

These Aurora Pumps and units are available in many different types and capacities for every type and size of operation. They are quality built for long, trouble-free operation. When maintenance is necessary, repairs can be made quickly and easily to get the pumps and system back in operation fast.



VERTICAL UNIT

For high capacities with special conditions . . . packing box only . . . ideal for applications where return is extremely low or below floor level . . . available as either simplex or duplex units. Capacities to 100,000 EDR—pressures to 60 PSI.



APCO TURBINE TYPE

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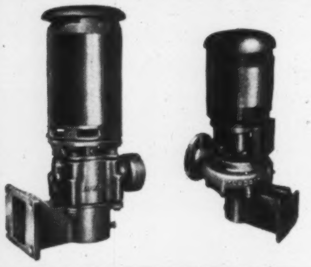
Steel or cast iron receivers . . . turbine type pumps with vertical centerline discharge will not vapor lock . . . high efficiency . . . packing box standard . . . mechanical seals optional . . . available as either simplex or duplex units. Capacities to 100,000 EDR to 115 PSI.



VERTICAL END-SUCTION

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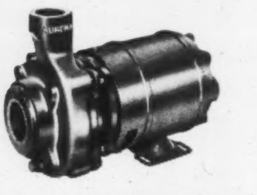
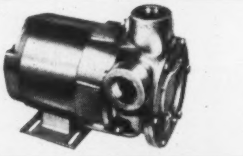
Especially applicable for OEM Equipment . . . Vertical mounting close-coupled design for maximum compactness . . . minimized space requirements . . . simplified, low suction mounting . . . optional discharge arrangements . . . low NPSH. Capacities to 1800 GPM and heads to 320 feet.



PACKAGED CENTRI-PAC

Close-coupled End-Suction

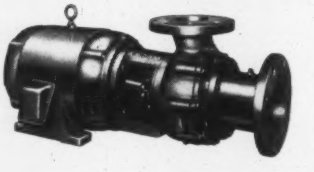
11 packaged sizes . . . stainless steel seals for maximum corrosion resistance . . . stainless steel motor shaft . . . cast bronze impeller . . . self-venting with vertical discharge . . . low NPSH. Capacities to 450 GPM and heads to 140 feet.



TURBINE TYPE

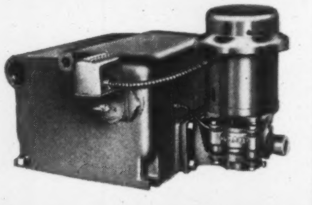
Close-coupled Pumps

Maximum simplicity . . . single stage . . . mechanical seals . . . optional self-priming feature. Capacities to 30 GPM . . . Heads to 350 feet.



CLOSE-COUPLED END-SUCTION

With self-venting vertical discharge . . . interchangeable mechanical seal or packing inserts . . . low NPSH . . . unique suction spool arrangement. Capacities to 1800 GPM and heads to 320 feet—also available with flexible coupled drive.



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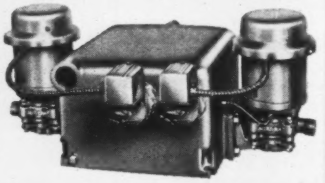
Utmost compactness . . . cast iron receiver . . . mechanical seals . . . close-coupled . . . low return . . . complete unit ready for installation of lead lines. Capacities to 15,000 EDR—20 PSI. Also available as Type AR with APCO Turbine Type pumps—capacities to 10,000 EDR—pressures to 80 PSI.



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For high capacity or heavy duty applications . . . broad flexibility . . . cast iron receiver . . . low return . . . mechanical seals standard . . . packing boxes on pumps optional when desired. Capacities to 150,000 EDR—pressures to 125 PSI.

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We follow here each month the practice at engineering society meetings of providing an "open for discussion" period. You are urged to take part. Just address your comments to the Editors, Heating, Piping & Air Conditioning, 6 N. Michigan Ave., Chicago 2.

"Open for Discussion"

Dilute Solvent Vapors May Not Settle, Therefore Exhaust May Be High or Low

WITH REGARD to the article, *How To Find Proper Air Flow Rate for Industrial Solvent Dilution*, by Clyde F. Metzler (December 1960) I think it should be pointed out that in the very dilute concentration of solvents which are permitted under most ventilation codes, such as the American Medical Association, even though these vapors are very much heavier than air they have little tendency to settle out or drop down to the floor.

Concentrations in the order of 20 to 40 ppm are so dilute that they are more affected by the Brownian movement of molecules (the rapid vibrating motion imparted to the solvent particles by the impact of air molecules surrounding them) than by specific gravity throughout the working atmosphere.

It is for this reason that ventilation is extremely important and while you will find some codes require exhaust air to be ventilated from the floor, very often you will find when dealing with low concentrations that it makes little difference whether the air exhausts from the floor or from the ceiling.

J. J. BURKE
Central Engineering Dept.
American Viscose Corp.

Approves Use of Three-Pipe System, Notes Alternate Mixing Method

THE ARTICLE, *Three Pipe Systems Gives Tenants Full Comfort Control*, by Anton Krapek (October 1960) is of special interest to me because of my own article, *Three Pipe System Lets Hotel Guests Choose Their Own Comfort* (April 1960).

I compliment the author for his ingenuity in adapting this system to his job, and I merely want to point out an improvement which has been made since his job was designed.

He used a three-way valve on each fan-coil unit which operates to blend the chilled and hot water before entering the unit, whereas in the system I describe there is no such blending, due to the construction of the three-way valve.

The water from the various units is mixed in the common return after its temperature has been raised or lowered nearly to room temperature by passing through the coil of each unit. This is during mild weather, when both heating and cooling may be required, and is rather different from mixing, say, 100 F and 50 F water. Such a plan should improve the efficiency of the system.

This type of valve has the further effect of reducing the system gpm except for the few hours or days of maximum demand. Since the piping is not zoned for exposure, then on the heating cycle for example, the water temperature must be kept by the outdoor controller at a level high enough for the coldest rooms.

Overheating in the warmer locations is prevented by the room thermostats. With the three-way valve used by Mr. Krapek, the system gpm must remain constant, but with the valve described in my article the gpm to each unit is reduced. Thus only after the hot water is fully shut off is cold water admitted.

Since it takes a considerable reduction in gpm to produce any substantial change in the heating capacity of a fan-coil unit, it follows that practically all winter there is a substantial reduction in gpm, and the same action occurs in reverse during summer months.

The benefit gained is a much lower electric power bill for driving the circulating pumps. When a unit

(*Continued on page* 136)

"Open for Discussion"

Continued

is neither heating nor cooling there is no water flow at all.

Lewis Smith
Heating Engineer

The author's reply — The type of valving system described by Mr. Smith could possibly have been adapted to our particular needs, although his equipment piping is somewhat more complicated than was ours.

Then too, he employs a multiple pump system of primary and secondary units which we had eliminated. Our system is of the one pump (plus standby) type, and is designed to maintain a constant pumping head and flow.

I must agree, however, that if we were to consider multiple zones of operation we might also be inclined to use a system such as he described.

All systems, regardless of their natures, do merit consideration by forward thinking engineers. Each project has its own particular peculiarities and it is in publications such as this that we find ideas to dwell upon and develop to meet our needs.

In regard to control of water temperatures in mild weather conditions, let us consider what would occur in the return main of a three-pipe system. Let's assume that we required cooling in ¾ of the building while the remainder requires heat. These mild weather conditions are such that large capacity for either heating or cooling is not necessarily required, but nevertheless the need is there.

Further assumptions follow with chilled water at 50 F and hot water at 90 F. With a 10 F rise in the chilled water as it passes through the coil, and a 20 F drop in hot water temperature, we have respective return water temperatures of 60 F and 70 F entering the return main.

At this point it should be noted that these drops are possible since fan-coil units are used. Averaging the temperatures indicates that we have a return temperature of 67.5 F. Even when the rise and drop are 5 and 10 F respectively, the mean return temperature is 73 F.

As explained in the text of the article, the temperatures delivered to the system are governed by outdoor air, and operations during the winter and summer past indicate that we can deliver water as cold as 45 F on the chilled water side, and as cool as 80 F on the hot water side.

In the case of constant head and constant pump operation required by this system, we could have again considered Mr. Smith's system and decreased operating hp, but since we used only one pump, the cost of its operation is small compared to the power used by the entire building.

Anton Krapek
Vice President
E. Roger Hewitt Associates, Inc.
Professional Engineers

Agrees Simple Solution Is Often Best, Notes Limits in Heat Transfer Designs

The example in the article, *Rewind Brake Gets New Cooling System*, by Kenneth W. Huffman in the November 1960 issue is truly, as the author says, somewhat elusive. However, it is simple. Very often the simple solution is the best. This system needs no thermostat as it acts as it own. Forced circulation would cause quick quenching and cracks in the casting.

It is well known in heat transfer problems that the greater the mean temperature difference of the two liquids, the less heat transfer area required. The heat exchanger operates more efficiently. But, often there are limits to these advantages due to the nature of the liquid being heated or the materials involved. Some liquids break down above a certain temperature and build up a scale on the heat transfer surface.

William D. Lesher
Engineer

Tells of Four Year's Successful Operation of Canadian Bid Depository

The article, *Mechanical Specialty Contractors Devise New Bidding Plan*, in the November 1960 issue was read with much interest by our committee. It was agreed that your attention should be drawn to a discrepancy that appears in the section under the heading "Earlier Solutions Failed."

The Montreal Bid Depository has been in operation for four years. All members of the Corporation of Master Electricians of the Province of Quebec and the Corporation of Plumbing & Heating Contractors of the Province of Quebec are required by their Corporations, when tendering on competitive jobs of over $5000 electrical and $10,000 mechanical in the district of Montreal, to submit their tenders through the Bid Depository. As the Corporations are the licensing bodies for these trades in the Province of Quebec, it follows that their members are compelled to follow the by-laws of their Corporations.

The value of the Montreal Bid Depository to the construction trade in general has been proved by other sub-trade groups applying for admission to the Bid Depository. These groups deposit on a voluntary basis and to date, we have had 100 percent cooperation from them.

It was the opinion of the Committee, that you

(*Continued on page* 141)

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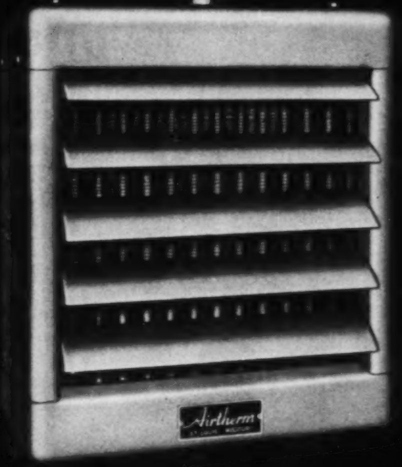
Unit Heaters



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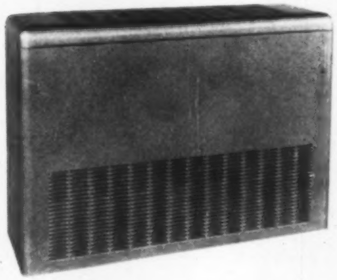
Airtherm propeller fan unit heaters can accommodate virtually every air distribution pattern, mounting height and heating requirement. Twenty-four vertical and twenty-two horizontal air delivery models . . . steam, air or hot water . . . capacities from 18,000 to 555,000 BTU's per hour.



Need cabinet unit heaters in a hurry? Get them from Airtherm in just two weeks! Eight models . . . 375 to 1630 CFM . . . 124,800 BTU's per hour at standard steam ratings and 103,500 BTU's per hour hot water ratings.

If the job requires propeller fan unit heaters—and they're needed pronto—you can count on Airtherm for fast, dependable delivery from stock. Orders are shipped the same day they are received!

Among many other advantages, Airtherm unit heaters enjoy an enviable reputation for amazingly quiet operation achieved by using resiliently mounted motors . . . expertly engineered fans and casings . . . plus particular concern for proper matching of face and outlet velocities.

Need more information? See your local Airtherm Representative or write direct.

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Sixteen pages packed with information about Airtherm unit heaters. Write for catalog No. 1211.

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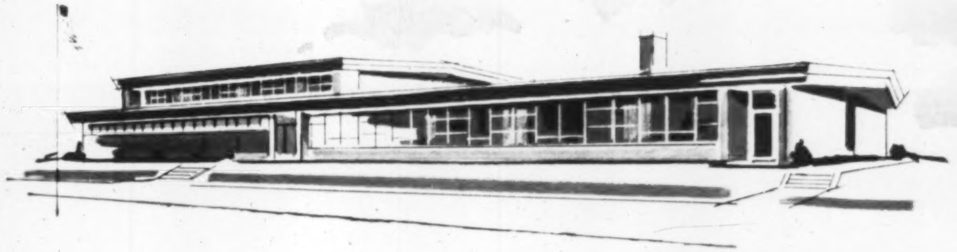
Mr. George Stewart, mechanical contractor for Jane Addams Elementary School, Melrose Park, Illinois, says:

"Honeywell stayed on to Jane Addams job to our

Mr. George Stewart, in the equipment room at Jane Addams Elementary School. The Honeywell panel behind him enables the building engineer to check the entire pneumatic control system.

check out the complete satisfaction"



JANE ADDAMS ELEMENTARY SCHOOL
Architect-Engineer: Kefer & Cronin, Chicago
Mechanical Engineer: Albert W. Marshall, Chicago
General Contractor: Louis Macro Co., Melrose Park, Illinois
Mechanical Contractor: Tropf Heating Co., Broadview, Illinois

At Jane Addams Elementary School, Honeywell servicemen stayed on the job long after the building was completed to make sure the temperature control installation operated perfectly

"Honeywell really came through for us on the Jane Addams job," says Mr. Stewart. "They saw that the temperature control equipment was delivered on time and installed on time. They turned in clear shop drawings of the temperature control system. They gave us good supervision during installation, then stayed on to thoroughly check out the system to make sure it worked well under actual school conditions."

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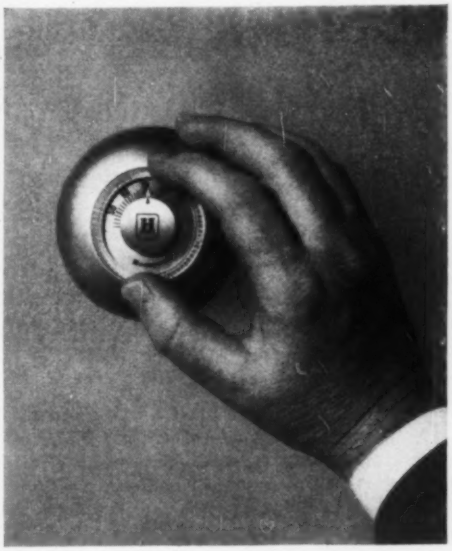

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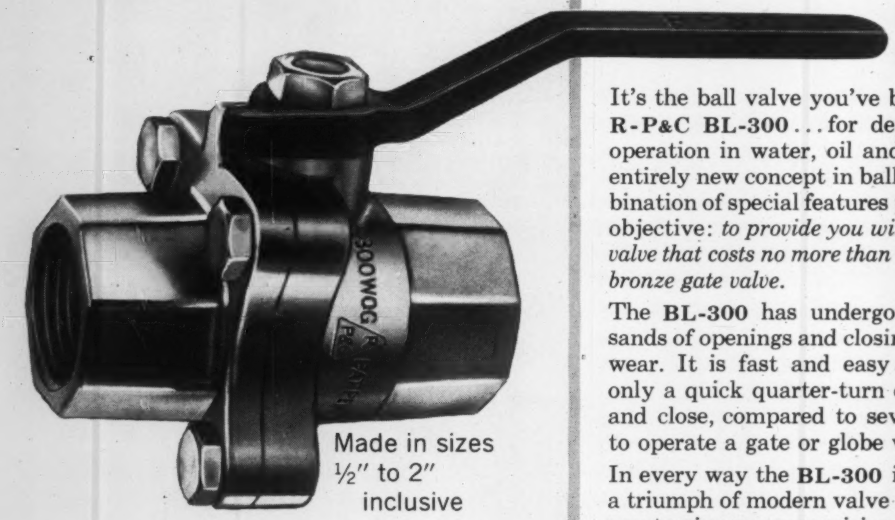

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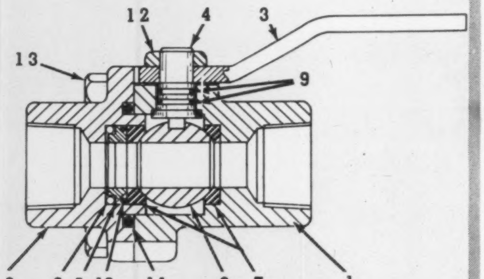

BODY (1) and **CAP** (2)—Forged Naval Bronze; **HANDLE** (3)—Malleable Iron; **STEM** (4), **DISC** (5) and **BALL** (6)—Naval Bronze; **SEAT** (7)—Buna "N"; **SPRING** (8)—Phosphor Bronze; **O-RINGS** (9, 10, 11)—Buna "N"; **NUT** (12)—Cadmium Plated; **SCREW** (13)—Carbon Steel

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"Open for Discussion"

Continued

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P. Y. Shotton
Manager
The Montreal Bid Depository

Comments on Various Aspects of Flooded Evaporator Data File

The HPAC Engineering Data File titled, *How to Design and Operate Flooded Evaporators for Cooling Air and Liquids*, by Professor W. F. Stoecker (December 1960) is excellent. He has covered the several phases of the subject in a thorough and comprehensive manner.

The advantages of the flooded system are clearly and accurately set out in this well developed article. One of the early examples of the advantages of the flooded system was demonstrated more than 40 years ago when the principle was first applied to the coils of ice freezing tanks.

In the early freezing tanks, the evaporating coils were located between the rows of ice cans, and the liquid refrigerant, ammonia was introduced through manually operated expansion valves to one or more liquid headers which connected the rows of coils at the top. Suction gas was removed through a suction header connecting the coils at the bottom.

This was referred to as the direct expansion system. Later, changes were made in the design of freezing tank coils that permitted liquid refrigerant to be introduced through a bottom header and the suction gas removed through a suction header connecting the coil tops. A suction trap collected any liquid carry-over from the coils, and returned the liquid through a drain line between the trap bottom and the bottom header.

In most instances, the suction trap was equipped with an internal liquid cooling coil that sub-cooled the liquid refrigerant before the liquid was introduced to the coils.

In some instances, the amount of surface provided in the internal coils was liberal enough to supply sufficient heating surface to evaporate the liquid carry-over, while in other cases the liquid trap was provided with a bottom drain, fitted with a check valve to prevent the back flow of refrigerant from the coils to the trap.

In this way, the compressor was protected from liquid carry-over by both gravity drainage of the trap to the coils and by evaporation resulting from the internal heat exchange coil.

It had long been the practice to install from 300 to 320 lineal ft of 1-¼ in. pipe per ton of ice making capacity prior to the introduction of the flooded system, after which the ratio was reduced to 200 lineal ft per ton. In some instances, the ratio was reduced as far as 180 lineal ft per ton.

Later, with the development of the trunk type coil, which was located in a separate compartment in the tank and operated flooded with the refrigerant supply to the coils fully automatic, the ratio of evaporating surface was still further reduced as a result of flooded operation and higher brine velocities over the coils. Such velocities were 150 to 175 fpm.

Suction Pressures Were Increased

This type construction permitted the carrying of higher suction (evaporating) pressures, which in turn resulted in lower power consumption per ton of ice produced.

The trunk type coil permitted a very great reduction in lineal ft of pipe per ton of ice over the old direct expansion system.

For example, with 20 psi suction pressure corresponding to 5.5 F, and a brine temperature of 15.5 F, or a 10 F split between the evaporating ammonia temperature and the brine temperature, the pipe allowance per ton ice freezing capacity was reduced from the earlier allowance of 300 ft to 60 or 75 lineal ft per ton of ice freezing capacity.

If the split in temperature is reduced to, say, 4.4 F with an evaporating pressure of 20 psi, 125 lineal ft of 1-¼ in. pipe per ton of icemaking capacity with the coils operated flooded will provide the evaporating surfaces required.

Flooding Improves Heat Transfer

It is true as pointed out by Professor Stoecker that the first cost of the refrigerant charge is higher in the case of the flooded system, but this is secondary to the improved heat transfer values of the flooded system over the direct expansion system. More evaporating surface is required for direct expansion systems than is required for evaporators operated flooded.

For example, in the case of both the floor mounted and suspended type fan driven coolers using ammonia as the refrigerant, approximately 15 percent more surface is required for the direct expansion cooler employing superheat controlled thermal expansion valves than is required by the flooded coil.

Taken all in all, the first cost of the flooded system over the direct expansion system is not at all a serious factor. The savings in investment in extra surface in evaporators plus the savings in hp per ton

(Continued on page 142)

“Open for Discussion”

Continued

of refrigeration will in time cancel out the added overall first cost if any.

Oil Removal From Ammonia Systems

Professor Stoecker's discussion of oil removal from ammonia refrigerating systems outlines a very practical and effective method to this end. He is quite correct in his statements concerning the difficulty surrounding the problem of oil removal from low temperature evaporators.

For many years this writer has made it a practice to install an oil collecting device, commonly referred to as an oil purifier, into which oil may be drained from high pressure oil traps on compressor discharge lines, and from cooling coils and coil type fan driven coolers. This permits the drain valves to be opened wide if necessary without danger to personnel, as is generally the case where oil is drained into open containers.

Often times, high pressure oil traps are fitted with either ½ in. or perhaps ¾ in. drain valves and connections which are soon plugged with foreign matter, and later when the plant engineer attemps to drain oil from the trap, the drain valve must be opened wide in order to dislodge the plug.

The chances are that the operator will be burned before he can close the valve, and then too, this usually results in the loss of ammonia.

One type of oil purifier in common use not only permits the recovery of the oil removed from the system but also the recovery of the ammonia that may be carried over with the oil. In some cases the oil contained in the purifier is heated by hot water or by an electric heating element, in order to accelerate the release of ammonia from the oil, thereby reducing the time required to drive the ammonia out of the oil from where the refrigerant is removed through a pipe connecting the purifier with the main suction line which serves the different evaporators.

Location of High Pressure Oil Traps

As stated by Professor Stoecker, oil interceptors located on the discharge line from reciprocating compressors are not 100 percent efficient and the fact that all compressors that are properly lubricated allows some oil to get by the pistons and ultimately reach the condenser and evaporators.

The ability of the high pressure oil trap to remove oil is improved by locating the trap as far from the compressor as conditions will permit. The further the gas travels from the compressor to the condenser the greater will be the loss of discharge gas superheat. The lower the temperature of the gas entering the oil separator, the more effective the separator of oil and gas.

In recent years there has been placed on the market a liquid line oil separator-distiller, designed to keep oil and moisture out of the low pressure, low temperature side of the system. This has been most effective in keeping oil out of evaporators.

While advances have been made in recent years in removing oil from evaporators and other parts of refrigerating systems employing refrigerants 12 and 22, the fact remains that the problem has not as yet been completely solved, and that much work remains to be done before we can write non-plus ultra; in place of plus ultra, more beyond.

C. T. Baker
Consulting Engineer

Flooded Evaporator Data File De-mystifies Process, Benefits Many

I have enjoyed reading the HPAC Engineering Data File entitled, *How to Design and Operate Flooded Evaporators for Cooling Air and Liquids,* by Professor W. F. Stoecker. (December 1960).

While this paper deals with systems and processes which generally have been in use for many years, it gives explanation of how and why they function so accurately and understandably that all the mysteries are cleared up. I suspect that relatively few engineers realize that it is the difference in density of the refrigerant in the evaporator and the liquid return leg that induces the liquid circulation, and this may explain some of the misapplications.

I would have liked to have seen some mention of the defrost method in which a stream of warm air could be admitted into the evaporator from the outside of the room by means of a system of dampers and electric heaters attached to the coils.

Professor Stoecker is to be congratulated on his fine contribution in this Engineering Data File. I am sure that even the competent and experienced engineers will learn from it.

Leon Buehler, Jr.
The Creamery Package Mfg. Co.

The author's reply — I want to thank Mr. Buehler for his comments. He is correct that air defrost and electric-heat defrost should have been mentioned also. The handling of the refrigerant during defrost by these two additional methods is the same as that for the water defrost.

W. F. Stoecker
Associate Professor of
Mechanical Engineering
University of Illinois

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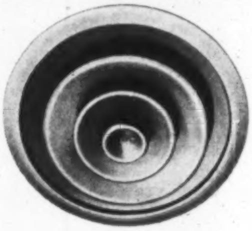

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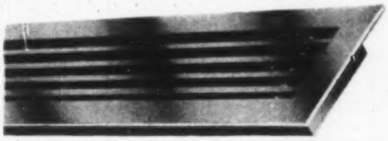

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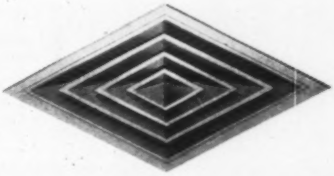

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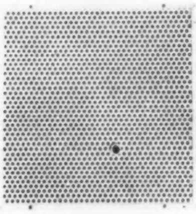

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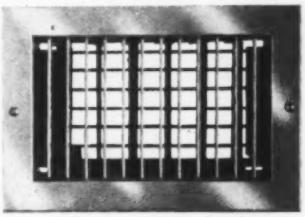

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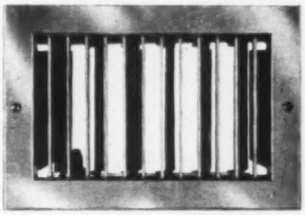

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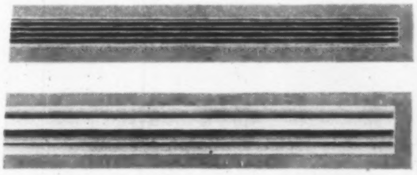

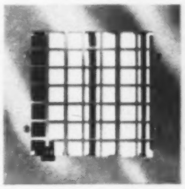

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question of the month

"How Should We Size Relief Valves For HTHW Water-to-Steam Converters?"

This question was asked previously in Heating, Piping & Air Conditioning and is repeated here, along with an answer that has been received from a reader. Two other answers were presented in the October 1960 issue. Other solutions or comments for publication are invited.

> *"Water-to-steam converters are required in many high temperature hot water heating systems. An important part of the design of the converter is the sizing of the relief valve. We have been unable to locate specific data covering this. We would like to know whether such data exists, and if so, where it can be found. Also, we would like to know how other designers size relief valves for this application."*
> *— J. S. B.*

Size for Maximum Theoretical Heat Transmission of Coil

THIS QUESTION touches a highly controversial point. I have encountered two schools of thought:

a) One which proposes the sizing of the valve for the maximum possible heat transmission of the coil in the heat exchanger.

b) The other which would consider also a possible break in the coil and the resulting pressure increase in the shell.

It is my opinion that the protection against the second case cannot be accomplished by means of a safety valve, and consequently I will describe further a method of protecting the shell of the vaporizer against coil failure without relying on the safety valve alone.

Under this condition it seems reasonable to assume that a safety valve shall be sized to evacuate as much steam from the vaporizer as the vaporizer is able to produce with the control valve in the high temperature water supply to the coil fully open.

The possible maximum flow of high temperature hot water through the vaporizer coil cannot be easily estimated except in a system where the vaporizer is the only piece of heat exchanging equipment. In this case the limit of the flow can be found at the intersection of the pump characteristic and the system characteristic which includes the resistance of the fully open control valve.

In the case of a more complex system with several valves controlling flow to their respective heat exchangers, we can assume that the maximum possible flow through any vaporizer coil may be way above the heat transfer capacity of the coil.

It, therefore, seems reasonable to size the safety valve for the maximum theoretical heat transmission capacity of the coil, which can be simply computed from the formula

$$Q = AK(t_{htws} - t_s)$$

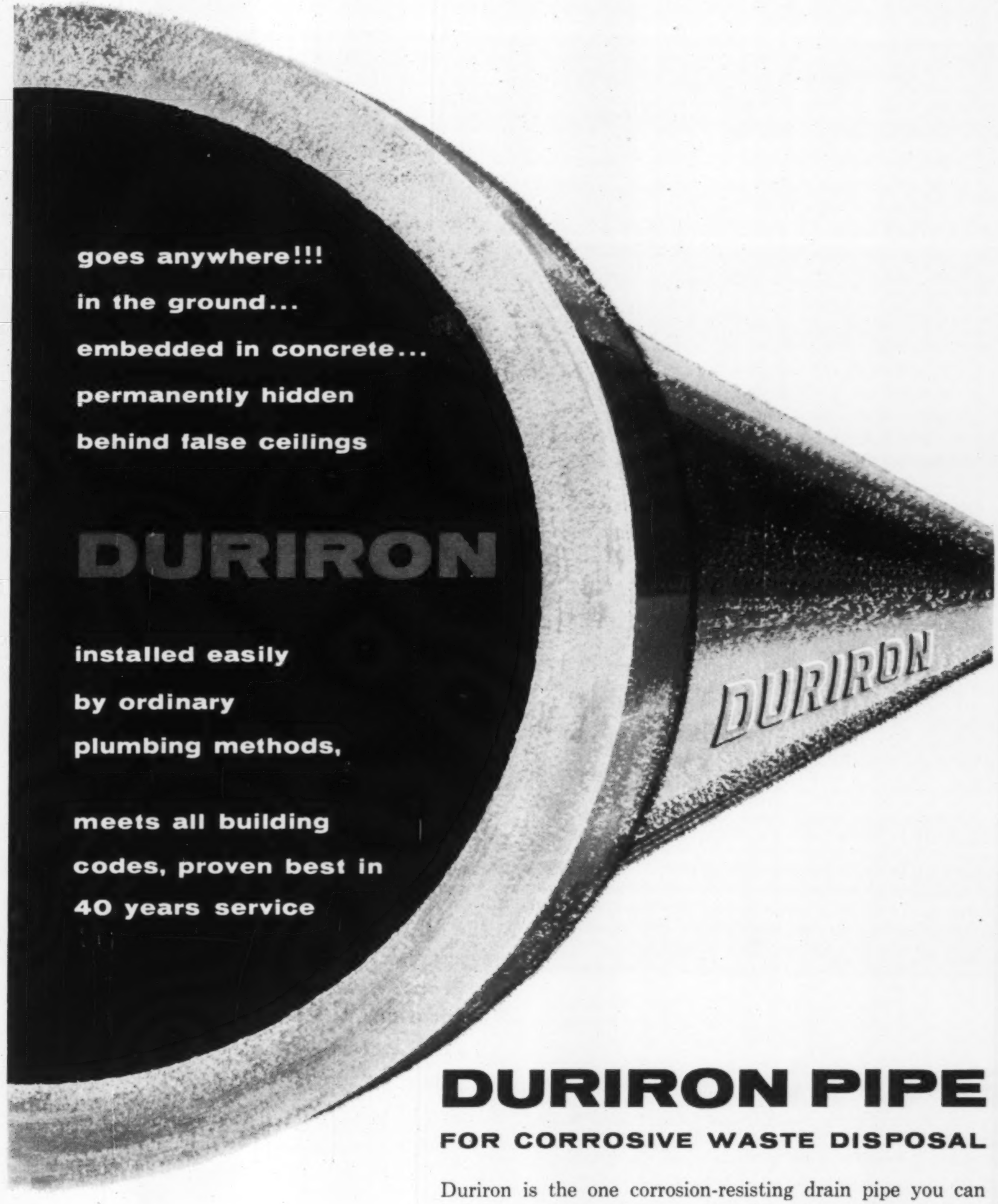
where

Q = heat transmitted, Btu per hr
A = the heating surface of the coil, sq ft
K = heat transmission coefficient, water to water, Btu per hr per sq ft per F
t_{htws} = supply high temperature hot water temperature, F
t_s = Saturation temperature of steam at safety valve set pressure, F

The K coefficient value may be controversial since high temperature water velocity is not known, but no great error can be made should a value be used of say, 175 Btu per hr per sq ft per F.

A safety valve which was sized for a steam output computed as described above will certainly be more

(*Continued on page* 146)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**actual case histories on request.*

question of the month

Continued

than adequate. The valve sizing shall comply with the ASME Code requirements for steam boilers.

Should a leakage develop in the coil, high temperature water will flash into steam and the pressure will rise, causing the control valve to close, but high temperature water can still enter the vaporizer from the other connection.

To protect the vaporizer for this eventuality, our firm has deviated from the standard practice still advocated by several authorities in the field of high temperature water design, of installing the control valve in the return connection to the coil.

For some time now in our designs we have been showing the control valve in the supply line and we call for a check valve in the return connection. In the case of a break in the coil, there is no pressure differential to open the check valve and so both connections will close automatically. When steam pressure drops, the control valve will open, but only as much as is required to maintain the pressure in the vaporizer.

With such an arrangement it can be objected that the leakage will not be apparent. However, it should be easily detected since high temperature water flashing in the vaporizer will produce an unusual noise, water level will rise in the vaporizer, while the condensate tank will overflow.

Although in the early years of high temperature water application the control valve manufacturers objected against too high a water temperature flowing through the valve, nowadays they do not object when water temperature reaches 400 F or even more, and so the old standard of installing the valve in the supply branch can be abandoned.

However remote the possibility may be of leakage showing in the coil, it may still happen when water treatment on either the high temperature water or steam side is inadequate, should non-ferrous materials be used in the high temperature water system or should there be errors in coil design or manufacture.

The above discussion will apply to low pressure hot water converters as well as to the steam generators, in which case the temperature controller will replace the pressure controller.

W. M. Marcinkoski
Professional Engineer
Wiggs, Walford, Frost & Lindsay
Consulting Engineers

"How Much Load From Vapor Infiltration?"

"My problem is primarily concerned with moisture vapor infiltration and/or transmission through cracks and door openings. Our operations include research with hazardous, explosive materials and must be conducted in an atmosphere of low moisture content (about 20 grains per lb of dry air.) Due to their character, these materials must be isolated in small cells having one light or frangible wall and roof for explosion relief.

"Recirculation is prohibited, due to the same hazards. Therefore it is desirable to keep the number of air changes to a minimum for the sake of economy. Exhaust fans and hoods are utilized which remove approximately 90 percent of the supply air. The doors, which are the only means of access, are located in the relief wall and constitute about 16 percent of the perimeter of the cell walls.

"My question is in two parts: (1) How much latent and sensible load should be included per ft of crack and per door opening with outside design of 100 F dry bulb, 81 F wet bulb, and with 15 mph wind? (2) Can the water vapor infiltration through the cracks be prevented by a positive air pressure within the space?

"It seems entirely possible, with the nearly 10 in. of water gage difference in vapor pressure between the outside and inside, that water vapor might be coming in while air could be traveling in the same direction along the same path.

"I would also appreciate knowing of any good reference material concerning the above problem, as well as the fundamentals and behavior of the mixing of gases, partial pressures, and vapor pressures."—M.B.M.

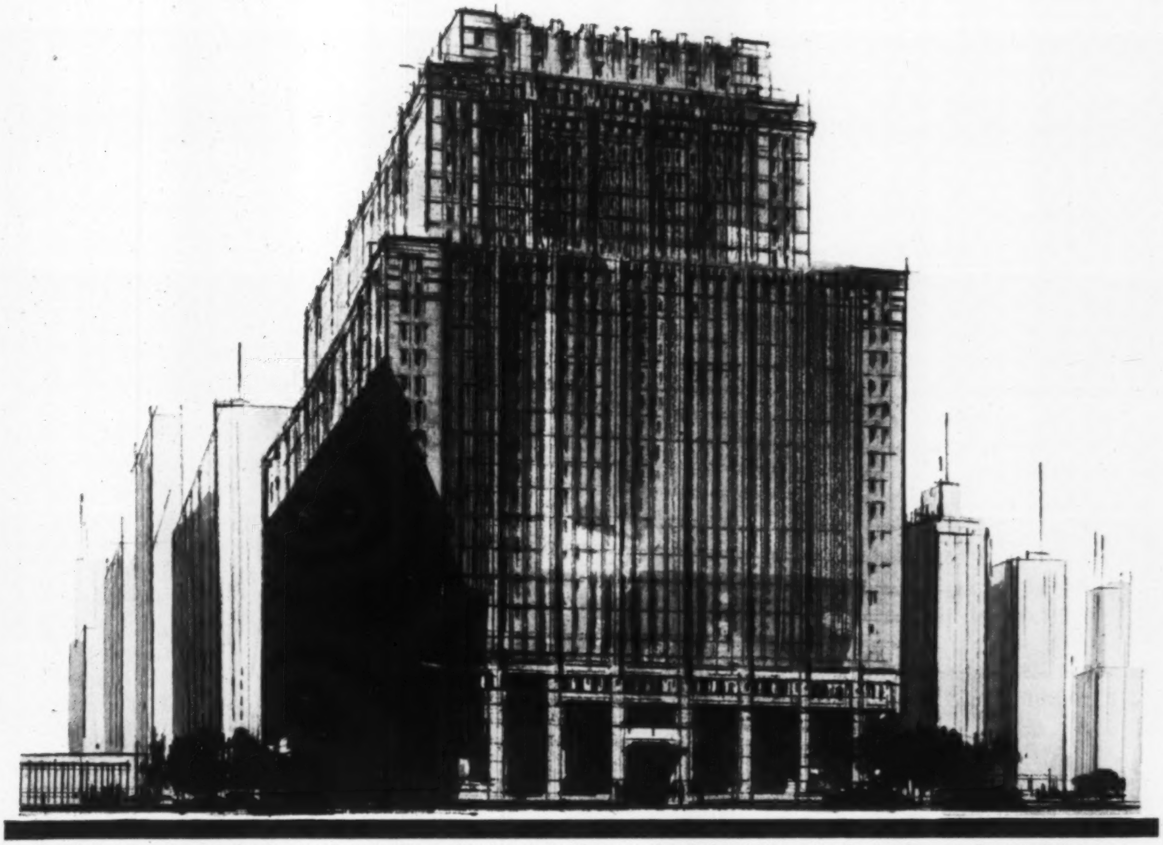
Proper Seal, Inlet/Outlet Facing, Location, Will Minimize Infiltration

I have the following comments in reply to the question "How Much Load From Vapor Infiltration?"

1) No vapor infiltration need occur through crackage if you use a light weight plastic refrigerator-type door seal. Moisture infiltration can occur through all of the cell walls, roof, and floor, but should be insignificant if a good vapor barrier is applied to the outer surfaces of the cell. I believe one of the new light weight cellular plastic materials would qualify as a "light" or "frangible" wall and could be used in such manner as to produce acceptably low sensible and latent gain through the cell walls and other surfaces.

(Continued on page 148)

Climate by Chrysler



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question of the month

Continued

2) Air motion will occur through door usage. This motion will not be violent enough to involve energy changes affecting the amount of water in any given sample of the moving air. Therefore the moisture will move in the same direction as the air does when the door is used.

3) Positive air pressure within the space will almost certainly not prevent outside air from entering when the door is used, and therefore will not prevent moisture from entering at the same time. This effect can be minimized by facing the cell air inlet and outlet in the same direction as the door, so that any prevailing wind tending to force air into the door will act to aid the supply fan and impede the exhaust fan, thereby slowing outside air entry. Please note that cell air inlet and outlet must also be located far enough apart so that exhausted air is not pulled into the inlet.

Also check, by experiment, to insure that nearby building surfaces do not deflect wind current in such a manner that inlets and outlets actually must be turned to "face" the wind.

4) If possible, normal entry to the cell should be from a building space that is supplied with conditioned air similar to that needed in the cell, and at a pressure above that in the cell. A vestibule with its own air supply might be useful here. Of course, this type of entry could not be built into the "blowout" or frangible wall.

5) If the frangible outside wall must be used for normal entry, then it is suggested that a windbreak or baffle be placed in front of the door opening. Properly designed, this will protect personnel outside in the event of an explosion, as well as breaking the wind velocity tending to force outside air into the cell when the door is used.

6) If much door usage is required, latent and sensible load may not be as important as the time it takes to restore inside design conditions after the door has been used. At least one full room air change will be needed, and the type of experiment or other considerations may govern how long you want to wait for the return of design conditions.

7) If you have several cells, an auxiliary outlet over each door can be connected to the main air conditioning supply duct and automatically operated to discharge a large surcharge of air with each door opening, economically eliminating transient and long-time effects of door opening.

8) The actual numerical calculations can be completed using almost any of the standard air conditioning texts. I cannot tell from the data presented whether hood capture velocities, condenser reheat cycle studies, or other attendant problems need investigating.

JOHN A. WEBER
Professional Engineer

READER ASKS —

"Can No. 6 Fuel Oil Be Used For Heating Large Installation Where Constant Modulation Is Required?"

"I am preparing a design for a new heating system for our plant, and will use unit heaters and convectors with hot water at a pressure of 50 psi and temperature of 300 F.

"The estimated capacity required will be 10 million Btu per hr. It is proposed to use two oil fired boilers of equal size, with a combined output of 12 million Btu per hr. The fuel being considered is a No. 6 fuel oil, with a viscosity of 3500 Saybolt seconds.

"The burners will have to be modulated constantly to satisfy the variable heating load, and I am wondering if it is wise to consider such a heavy oil for this purpose. I realize that No. 6 fuel oil will require preheating prior to combustion, but the operating cost with No. 6 oil will be considerably lower than with lighter fuels.

"I would like to hear from other readers of Heating, Piping & Air Conditioning about this and learn what their experiences have been with No. 6 fuel oil for large installations of this type."—R.A.W.

● *YOU ARE INVITED to contribute a question for publication or an answer to a published question. Write: The Editors, Heating, Piping & Air Conditioning, 6 N. Michigan Ave., Chicago 2.*

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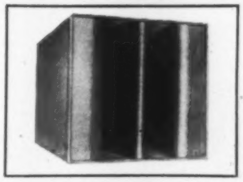

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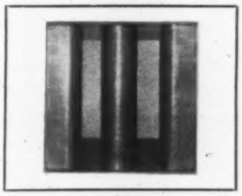

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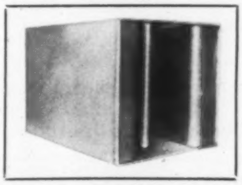

MODEL LPD:
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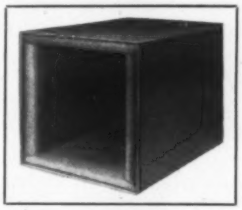
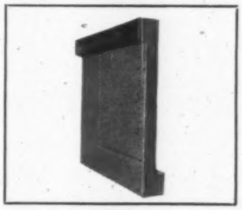
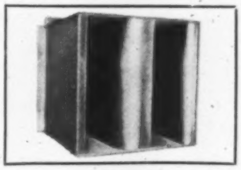


UNI-RESONATORS:
Are used to increase low frequency attenuation of the silencer system. Uni-Resonators are always installed between two Uni-Silencers. The Uni-Resonator is a volumetric unit constructed of an unperforated sheetmetal shell and two thick perforated metal faced interior acoustical surfaces.



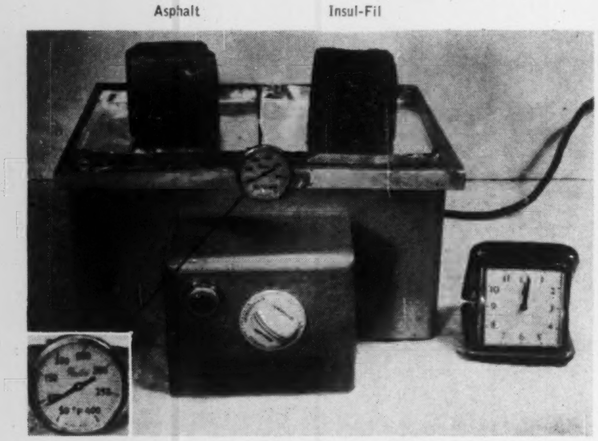
CROSS-TALK UNI-SILENCER:
A "Z" type unit having negligible pressure drop. This unit has sound attenuation equal to a 4" gypsum or cinder block wall. The Cross-Talk Uni-Silencer is usually installed in a wall to provide supply or return air to a room without the transfer of noise or loss of "privacy of speech."

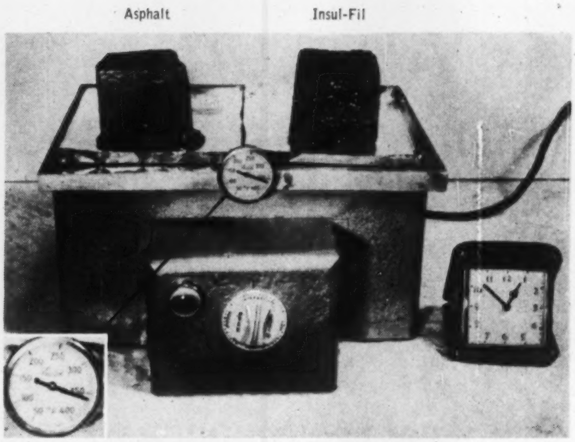


MODEL BC UNI-SILENCER:
Was designed to be installed below a roof ventilator. This unit does not increase the silhouette of the roof ventilator and permits room for the usual damper control. It provides moderate sound attenuation with negligible pressure drop.

ROOF VENTILATOR UNI-SILENCER:
Provides a very large amount of sound attenuation with some pressure drop and is installed on top of the roof with the roof ventilator above the silencer. While this design increases the silhouette of the roof ventilator it provides adequate attenuation to solve practically all noise problems involving this type of ventilation.

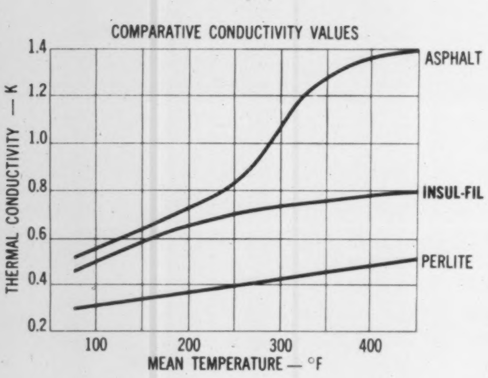
PROOF! insul-fil®*





This series of unretouched photographs proves Insul-Fil most efficient in thermal stability and insulation values, and in providing greatest structural stability, even when used at its maximum temperature limitation. You see for yourself how the Perlite aggregate in Insul-Fil arrests the flow characteristics inherent in unfilled asphalts. This prevents occurrence of voids under the piping, eliminates cracking and crazing. The Perlite not only provides Insul-Fil with greater insulation than any unfilled asphalt, but the Perlite actually serves as a reinforcing medium to increase greatly the structural stability of the insulation.

PROOF! insul-fil most effective of all fill-type insulations for underground piping



Clearly shown in this chart are insulation values of Insul-Fil compared to ordinary asphalts. Insul-Fil is by far the most effective.

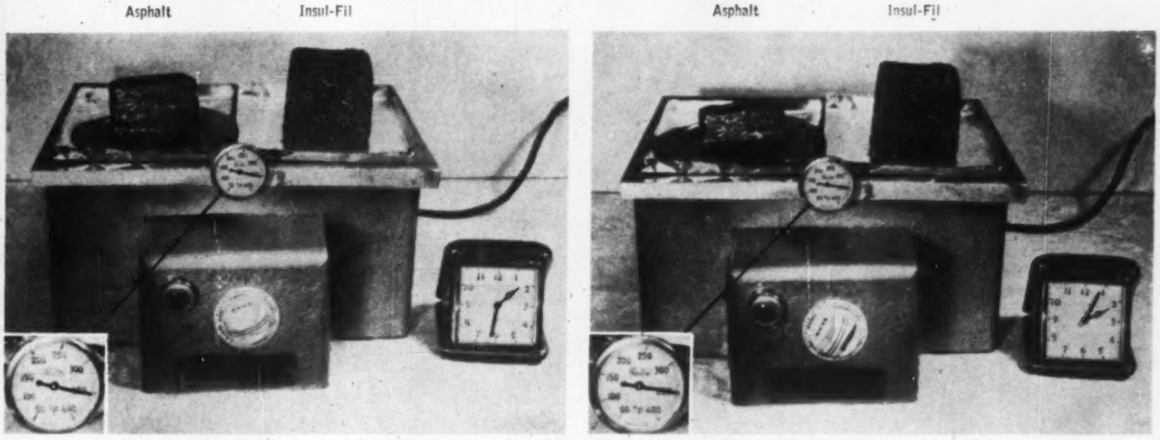
After Insul-Fil is installed and heat is introduced into the lines, the Insul-Fil is formed into a homogeneous consolidated mass consisting of a small plastic area of varying thickness at the pipe wall, an accompanying sintered area, and in the lower temperature range an area of unsintered material immediately adjacent to the soil.

Unlike the 100% asphalts, *Insul-Fil* does not crack and craze from thermal shock when the heat is turned on or off and therefore does not provide access for water to the pipe. It is during the critical shut down period of spring and summer when cold pipe is especially subject to corrosion that Insul-Fil is so highly resistant to water penetration.

YES! There's A Big Difference Between INSUL-FIL And All Other Fill-Type Insulations For Underground Piping.

*** insul-fil, a development of Miracle Adhesives Corporation and The Atlantic Refining Company, is a unique combination of high softening point petroleum asphalt blended with coated inorganic Perlite. Perlite, made from a volcanic rock which has been crushed, screened and expanded at a very high temperature, is composed of glass-like beads or perls. Each perl contains a maze of "sealed" dead air cells which gives Insul-Fil its light density and high insulation value. The patented process developed for waterproofing the Perlite makes Insul-Fil far superior in water resistance. The Perlite measurably extends insulation value over that of any unfilled asphalt. Another exclusive and important Insul-Fil development is priming of pipe with acceleration #7591, which provides continuous adhesion of Insul-Fil to pipe, speeds consolidation, and gives positive protection against corrosion by galvanic action.**

most efficient of all fill-type insulations for underground piping



Typical asphalt shown at left shows the flow characteristic of asphalts that are used for underground insulation. Note that these products have a softening point (Ball and Ring Method) of 305° F. Thus it becomes quite fluid far below its recommended upper temperature.

Insul-Fil, at right, only becomes pliable and putty-like in consistency, immediately adjacent to the source of heat. It never softens to a consistency that will flow through sleeves into manholes or other spaces.

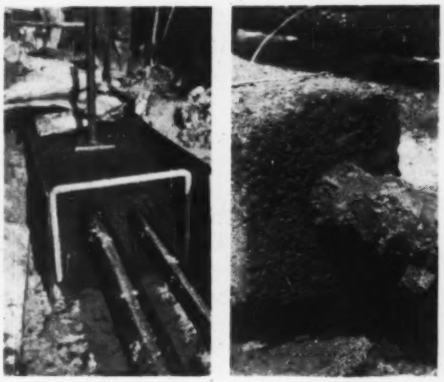
PROOF! *insul-fil* most economical of all fill-type insulations for underground piping

1 Comparative cost analysis between Insul-Fil and all other types of underground conduit proves Insul-Fil in place costs substantially less.

2 Insul-Fil weighs 30% less than other materials, and therefore costs less to ship, less to handle, less to install.

3 Insul-Fil is simple to install. The materials are all in one package—2 cubic ft. weighing 57 lbs. Insul-Fil Primer supplied free of cost is applied to the surface of the pipe. The loose Insul-Fil is poured from the bag around the piping to be insulated well prodded and tamped, then the trench is backfilled. As simple as that. Heat introduced into the system forms the conduit. Thus labor for installing Insul-Fil requires no special skill. The application is a simple, one trade operation.

Insul-Fil keeps on saving you money, with its effective control of heat loss and pipe corrosion, eliminating maintenance. Field changes in the installation of Insul-Fil underground systems can be made easily, without any changes in the material or its application.



There's A Big Difference Between INSUL-FIL And All Other Fill-Type Insulations For Underground Piping.

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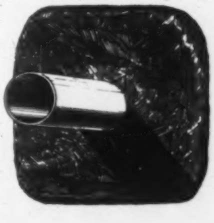
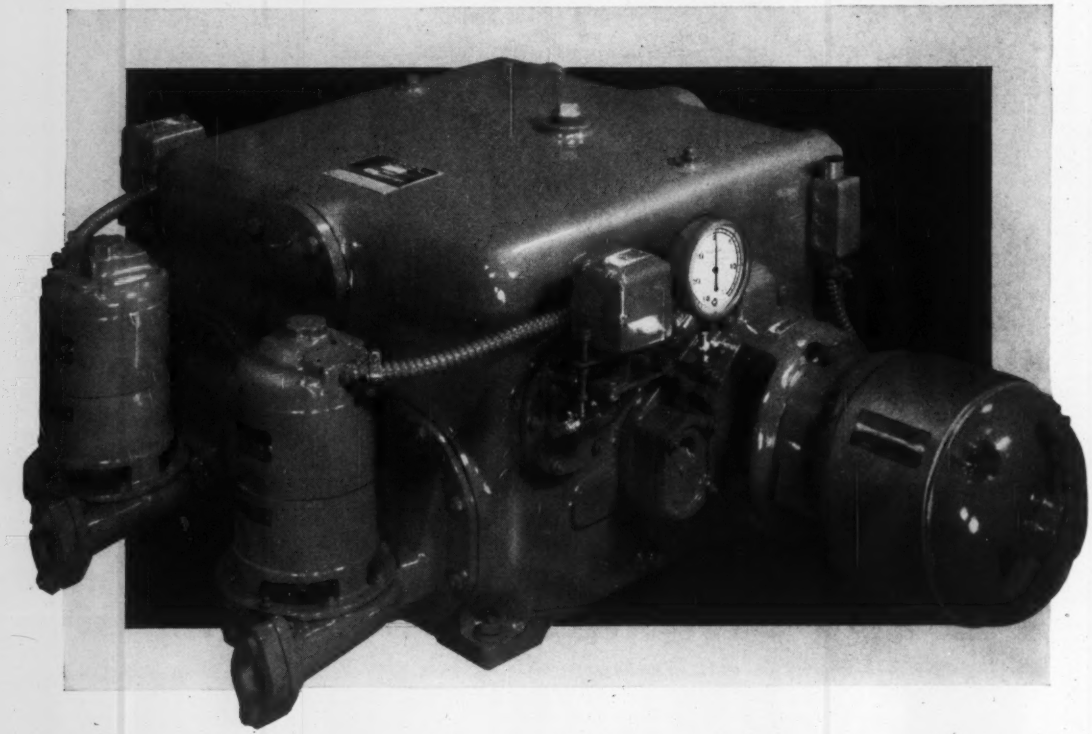


THIS NEW VACUUM HEATING PUMP

HAS THE INCREASED AIR CAPACITY EFFICIENT HEATING PRACTICE DEMANDS



It's the Nash CSM

Designed and manufactured by the organization that made the Jennings Manifold Heating Pump standard of the Heating Industry, the new CSM incorporates every desirable feature architects, engineers, owners and operators have sought. Employing separate air and water pump elements, each with its own motor and each independently controlled by its own automatic switch, the capacities and arrangement may be widely varied to meet job conditions. For the first time, the engineer has the choice of realistic water and air capacities required for rapid system response without wasteful overheating.

These pumps possess many other features which permit a more efficient utilization of fuel and minimum use of electric power. Low, low returns reduce installation costs and usually eliminate putting the pump in a pit. Simplicity and efficient operation reduce supervision and maintenance costs. Information regarding this new heating pump development is available immediately upon request.

- ✓ **Increased air capacity induces rapid system response without wasteful overheating.**
- ✓ **Separate air and water pumps individually selected to meet actual job requirements.**
- ✓ **Control system that operates individual pumps only when needed.**
- ✓ **Flexibility permitting addition of radiation without changing basic pump installation.**
- ✓ **Low, low, return line connection.**

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● Practical circumstances, says the author, usually prescribe a direct-return type of feeder system for HTHW applications, using two-way modulating control valves. For such a system, the length of the longest feeder main has a preponderant effect on required sizing of control valves. The control valve farthest from the boiler is the crucial one. A thorough analysis of conditions at this point may indicate that a valve sized by accepted "rules of thumb" may not be able to maintain control when other services on the line decrease, or at a condition of overload. Therefore, control valve sizing should proceed from calculation of the pressure drop across this farthest valve under all normal and extraordinary conditions.

Mr. Lynam was a student of physics at the National University of Ireland before coming to the United States in 1923. He has been engaged in heating, air conditioning, and ventilating design since 1941, and is a licensed professional engineer in California.

Analysis, not "rule of thumb" is needed in

Selecting HTHW Control Valves

IT HAS often been suggested that the distribution piping of a high temperature hot water (HTHW) heating system should be designed as a "reverse return" arrangement, or, in certain circumstances, as a "one-pipe" system. Three-way valves have also been suggested for the control of converters and other heat using equipment.

The theoretical advantages of these arrangements, however, almost always are invalidated by practical considerations, so that the vast majority of HTHW systems employ "direct return" feeders and two-way modulating control valves. This article is restricted to such systems.

Fig. 1 represents a typical system of this type. Feeder *F* is the longest main and extends to the building furthest removed from the boiler house, where it supplies a LTHW converter, a domestic water heater and a steam generator. *A*, *B*, *C*, *D*, and *E* are services to similar units in buildings closer to the boiler house.

Suppose the supply temperature is 400 F, and the calculated equivalent length of the circuit to *F*, including both supply and return mains, is 5000 ft. Calculated pressure drop, for the purpose of this discussion, is uniform, and equivalent to 2½ ft per 100 ft of length.

The converter has a rated capacity of 1 million Btu per hr (1000 Mbh) with LTHW at 210 F supply and 180 F return. A water heater is selected to heat 600 gph from 60 to 140 F (400 Mbh) and has a storage capacity of 480 gallons. The steam generator is rated at 400 lb per hr of steam at 40 psi, or approximately 400 Mbh.

Converters, water heaters, and steam generators are usually selected on the basis of a leaving HTHW temperature 15 F higher than the design high temperature of the secondary system, with a minimum of 180 F.

The temperature drop of the HTHW for the various units is, therefore

Converter: 400 − 225 = 175 F
Water heater: 400 − 180 = 220 F
Steam generator: 400 − 302 = 98 F

Assuming that 1 gpm equals 475 Btu per F per hr,

By JOSEPH P. O'F. LYNAM
Senior Mechanical Designer
Daniel, Mann, Johnson & Mendenhall
& Associates. A Joint Venture
Architects & Engineers

Selecting HTHW Control Valves

the corresponding control valve capacities are

Converter: 1,000,000/(175 × 475) = 12 gpm
Water heater: 400,000/(220 × 475) = 3.9 gpm
Steam generator: 400,000/(98 × 475) = 8.6 gpm

We have selected these particular units, furthest from the boiler source, for analysis because obviously the pressure drop in the mains is greatest at the most remote service. Consequently, the pressure across the control valves will be the lowest in the system. Also, as will appear later, the variation of valve pressure drop is greatest at this point.

Selection "Rules" May Mislead

Many "rules" for selecting such control valves have been published. A typical example is that given in Building Research Advisory Board Technical Report No. 37, Par 10.2j. To quote: "Two-way valves should be sized on a pressure drop equal to at least one-half the available pressure differential between the primary supply and return piping at the control device, and in no case less than a 5 psi pressure drop."

It has been our experience that the pressure drop through a converter or similar unit with HTHW in the primary coil practically never is as much as 3 psi. Adding the pressure drop in the runouts will not bring the combined drop up to 5 psi.

Consequently, if the rule is to be applied to the valves under discussion, they should be selected on the basis of a 5 psi pressure drop. And it also follows that the system pump should be selected to provide this pressure drop across the valves at system design capacity.

The design pump head should therefore be:

5000 ft × 0.25 (main circuit) plus 4 psi (exchanger coil and runouts) plus 5 psi (valve) or, assuming that on the average 2.6 ft in length is equivalent to 1 psi, a total of 57 psi.

The drop across these valves would, therefore, be only about 1/12 of the total system drop.

Such a ratio of pressure drop across a valve to total pressure drop of the circuit is contrary to the recommendations of valve manufacturers, and in fact is completely contradictory to the report from which the "rule" was quoted. Later in the report (Par 10.2f) the statement is made that "The valve must be the *major restriction* in the *circuit* being controlled." (Italics ours).

Why "Rule" May Not Apply

Why the quoted "rule," or any other similar import, is of questionable worth when applied to "direct return" HTHW systems can, perhaps, best be illustrated by applying it to the case under consideration and by analyzing the results.

The type of valve almost unanimously recommended for this type of service is the "industrial" type valve with air diaphragm operator, single seated, and with "constant percentage" characteristics.

The constant percentage characteristic is of great importance in this particular application as experience has shown that it provides the best control of any available type of valve.

The meaning of the phrase is simple. It means that for a small movement of the valve stem, expressed as a percentage of the total available stem travel, the flow will change by an equal percentage of the original flow.

Obviously a change of flow through a valve by 2 or 3 *percent* when it is almost open would be much greater than the same *percentage* change when almost closed, though the change in each case is accomplished by an equal movement of the stem. Actually, for a typical valve a movement of 1/16 in. in the range 80 to 90 percent open results in a change of flow about nine times greater than the same stem movement in the range 10 to 20 percent open.

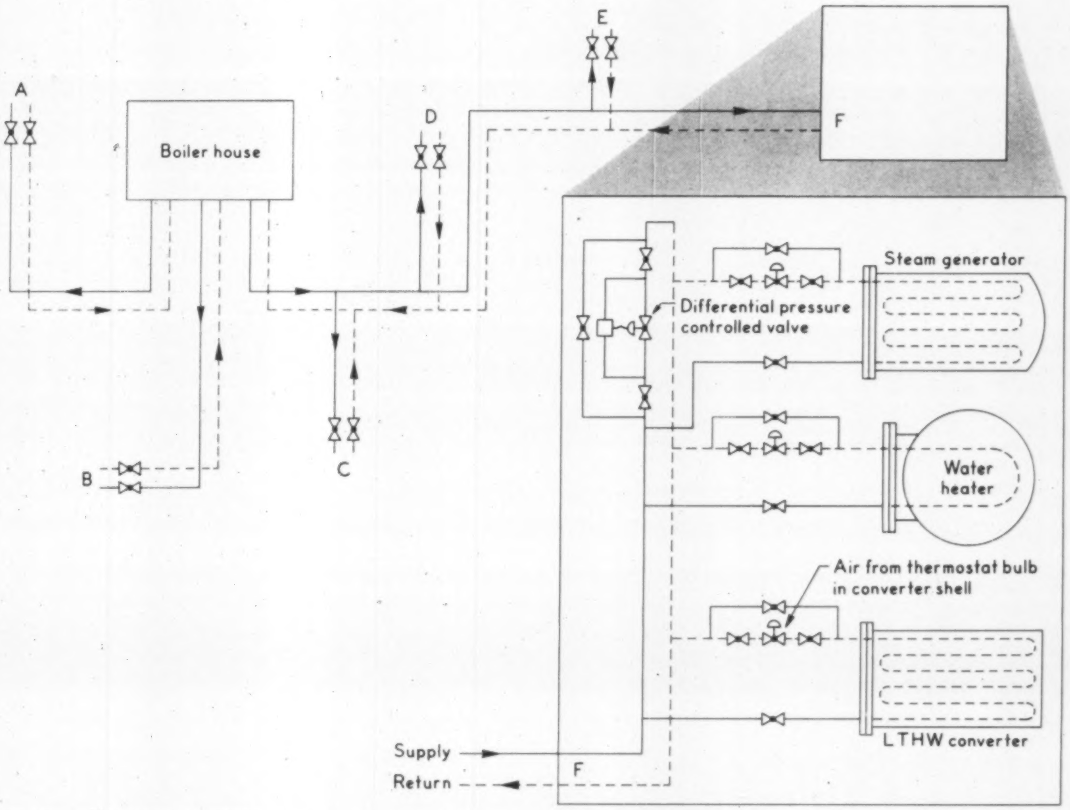
The equal percentage characteristic is built into the valve by contouring the plug relative to the seat or by providing a cylindrical plug which slides in the seat opening and has flutes machined in it. The latter type is especially suited to the small flow characteristic of HTHW.

Rate Valves by Flow Coefficient

The capacity of such valves is usually rated in terms of the valve "flow coefficient" (C_V). The C_V of a valve is simply the gpm of water which will pass through the valve with a pressure drop of 1 psi. The coefficient is usually listed for the valve in the wide open position, though sometimes it is listed for various positions of the valve stem.

Given the C_V of any valve, it is easy to determine its capacity at any pressure drop, since the flow will vary as the square root of the pressure drop.

Thus, for a valve with $C_V = 1$, the flow will be $1 \times \sqrt{4}$ or 2 gpm with a pressure drop of 4 psi. It will be $1 \times \sqrt{9}$ or 3 gpm for a pressure drop of 9 psi, and so on.


E
A
D
Boiler house
F
Steam generator
Differential pressure controlled valve
Water heater
Air from thermostat bulb in converter shell
LTHW converter
B
C
Supply
Return
F

1 HTHW PIPING SYSTEM shown here illustrates situation where control valve sizing must proceed from calculation of pressure drop across most remote valve (*F*). Enlargement shows services at *F*. *A*, *B*, *C*, *D*, and *E* are similar services at closer points

The "rangeability" of such valves is usually 40:1 to 50:1. This means only that the range of flow through which the valve can maintain controlled flow is, theoretically, 40 or 50 times the "on-off" range at the almost closed position, which exists only because of machining tolerances.

Thus, a valve which would pass 10 gpm when fully open at a certain pressure drop would maintain control down to 1/4 to 1/5 gpm, but would "hunt" from that capacity down to 0 gpm (closed). In this regard, it is most important to remember that if the valve had been selected for too low a pressure drop, the "uncontrolled" range would be increased and the "controlled" range decreased considerably.

Apply Criteria for Heat Exchangers

It is a simple matter to apply these criteria to the selection of control valves in accordance with the "rule" about which we spoke before, for the three heat consuming units at point *F* on the main.

The pressure drop across the valve is 5 psi, and $\sqrt{5} = 2.24$.

The rated capacities for each unit are again; converter, 12 gpm; water heater, 3.9 gpm; and steam generator, 8.6 gpm.

Required C_V for each is calculated by dividing gpm by the square root of of the pressure drop, $\sqrt{\triangle P} = 2.24$, so that the C_V for each unit becomes: converter, 12/2.24 = 5.37; water heater, 3.9/2.24 = 1.74; and steam generator, 8.6/2.24 = 3.84.

At this point it would be necessary to refer to some manufacturer's valve rating data for final selection.

Allow for Possible Overload

Some allowance should be made for possible overload, so it is advisable to choose a valve with the necessary C_V at 95 percent open position or slightly less. The selected valves would be, for example:

Converter: valve size 1 in., orifice 1 in., C_V at 100 percent, 9.76

Water heater: valve size ½ to 1 in., orifice ½ in., C_V at 100 percent, 3.15

Steam generator: valve size ¾ in., orifice ¾ in., C_V at 100 percent, 5.03

Assuming the rangeability of the valves to be 40:1, and considering only the converter valve for the moment, its full capacity at $\triangle P = 5$ psi would be 9.75 × 2.24 or 21.8, and it would maintain modu-

Selecting HTHW Control Valves

lating control down to 21.8/40 or 0.545 gpm.

The operating rangeability (or turn-down ratio) of the valve would be 12:0.545 or 22:1. Similarly, the ratios of the other two valves would be 22.2:1 and 30.7:1 respectively.

Must Consider All Conditions

Adequate control would be provided by these valves under these conditions. However, other operating circumstances must also be considered.

The differential pressure controlled valve (DPV) shown in Fig. 1 is provided to maintain a minimum flow in the circuit of 25 to 33 percent of design flow under low load conditions, in order to prevent excessive cooling or stratification in the supply line.

Let us assume that the load on the rest of the system (*A,B,C,D,* and *E*) has decreased to such a minimum. In other words, it has decreased to 1/3 of design load.

The pressure drop due to friction in the mains is (very closely) proportional to the square of the velocity (or to the gpm). This drop under these new conditions would, in consequence, be $48 \times 1/3^2$, or 5.35 psi at one-third design flow.

Pump Head, Pressure Drop Will Increase

But under the same conditions of reduced flow the pump head will increase by 5 or 7 psi so that the pressure drop from supply to return main at the subject run-out will be about 48 to 50 psi, and the valves will have to maintain control with this much greater pressure drop.

Assuming the $\triangle P$ to be 49 psi, and again considering the valve controlling the converter, its full capacity is now $9.75 \times \sqrt{49}$ or 68.3 gpm, and it will maintain control down to 68.3/40 or 1.7. The turn down ratio is 12:1.7 or 7:1. The ratios for the valves controlling the water heater and steam generator would be 7:1 and 9.6:1 respectively.

Again, such is the versatility of these valves, adequate control would be provided. The thermal inertia of the mass of water in the water heater and steam generator is such that 2-position control from 1/7th or 1/10th of HTHW design flow to zero flow would not seriously affect either the temperature of the hot water or the steam pressure.

In the case of the converter, since only a small quantity of water is in the shell, considerable variations of supply temperature might be expected, but again, the thermal inertia of the secondary system could be expected to "iron out" the output.

On the basis of the analysis up to this point it would seem that the "rule" we are considering is adequate. But there are still other factors that should be considered.

Must Provide for Overload

The various "loads" connected to the feeder were doubtless calculated on the basis of accepted criteria. Thus, water heating and steam loads in all probability were estimated by certain empirical formulae, and space heating loads were probably calculated on the basis of the data contained in Chapter 12 of the ASHRAE Guide (1960).

There is always the possibility, however, that an overload can occur. In fact economic design is such that occasional overloads *will* occur.

Now a drop of 2 or 3 F in occupied areas can usually be tolerated for quite considerable periods.

However, in the system which we are considering it is clear that if, for example, a combination of adverse climatic conditions (e.g. excessive wind velocity at or near design temperature) were to increase the space heating demand by, say, 6 percent and space heating were, say, 50 percent of the total, then all space heating control valves would tend to modulate open past their design capacity.

In fact, they would tend to increase the *flow* more than in proportion to the increase in demand for *heat.*

Full Load Operation Is Now Impossible

If as a result the flow were to increase by, say, 4 percent in the services closer to the boiler house than those we are attempting to analyze, the friction drop in the mains would increase by about 8 percent, or 4 psi, and at the same time the head developed by the pump would drop by 1 psi or so. Obviously, the pressure across the three valves would be quite inadequate for full load operation.

At the reduced flow, of course, the resistance of the exchanger and run-out connections would decrease, increasing the $\triangle T$ at the valves, so that 75 or 80 percent capacity might be possible. The situation could, nevertheless, be serious. Suppose, for

"The rule would seem to be adequate, but . . .

. . . there is always the possibility of overloads"

example, that the three items under consideration served a hospital and clinic on a Military Base. A reduction in room temperature of 10 to 15 F would be disastrous in such an instance.

Are Heat Loads Accurately Estimated?

There are other considerations involved. This discussion has been predicated on the assumption that heating loads (and diversity factors applied thereto) and friction loss in piping could and would be accurately determined. Luckily, in a sense, this is not so.

Heat loads are almost always overestimated so that in actual fact an overload capacity nearly always exists in any given system. And the pressure drop in piping is, in the writer's opinion, invariably overcalculated.

This is understandable for several reasons. Data in common use include allowances for variations of diameter and surface conditions, and such allowances tend to increase the calculated friction (a very small difference of diameter can result in a very appreciable difference in friction).

Also, allowance is usually made for corrosion and/or scale formation. In a properly designed and installed HTHW system neither is likely to occur. The distribution piping of a "cascade" system (or of the more modern direct contact systems) can be expected to remain uncorroded and free of scale indefinitely.

Thus, if the pressure drop in the feeder under discussion was in fact overcalculated by, say, 10 percent, the pressure available at the valve would, in fact, have been 10 psi approximately, instead of 5 psi.

Oversizing Is Wrong But Fortunate

This, of course, is a fortunate situation for the designer. True, the valves may have been oversized, but the net result would be only that a slightly less accurate control would result under system full load conditions; the accuracy of control under minimum conditions would not be impaired, and, most important, the possibility of undesirable results under overload conditions would have been largely eliminated.

We would still, however, be in the invidious position of having employed a "rule of thumb" which, in fact, is of little value.

Longer Mains Will Compound the Problem

The hypothetical case under discussion involves a feeder of moderate length (2000 ft or so). Many HTHW systems include much longer feeders with greater line pressure drop and greater variation of pressure drop across the more remote valves. In such cases the possible troubles enumerated would be compounded, perhaps to the point where even the great adaptability of the valves would not be sufficient to avoid trouble.

All of this is intended to indicate that the selection of such control valves should not depend on any "rule of thumb". Instead the designer should understand how such valves operate and should select them only after an analysis of the operation of the system as a whole under extreme conditions including the characteristics of the unit which each valve controls.

To sum up, the following points might be made:

1) The valve which is most remote from the boiler is the crucial one. Once its pressure drop has been determined, the selection of all the others is routine. The available pressure will, obviously, increase the closer the valve is to the boiler house and the less will be its variation.

2) The head developed by the pump depends on the selected pressure drop across the most remote valve, and should be based on it plus the drop under design conditions of the *complete* pumping circuit through that most remote valve.

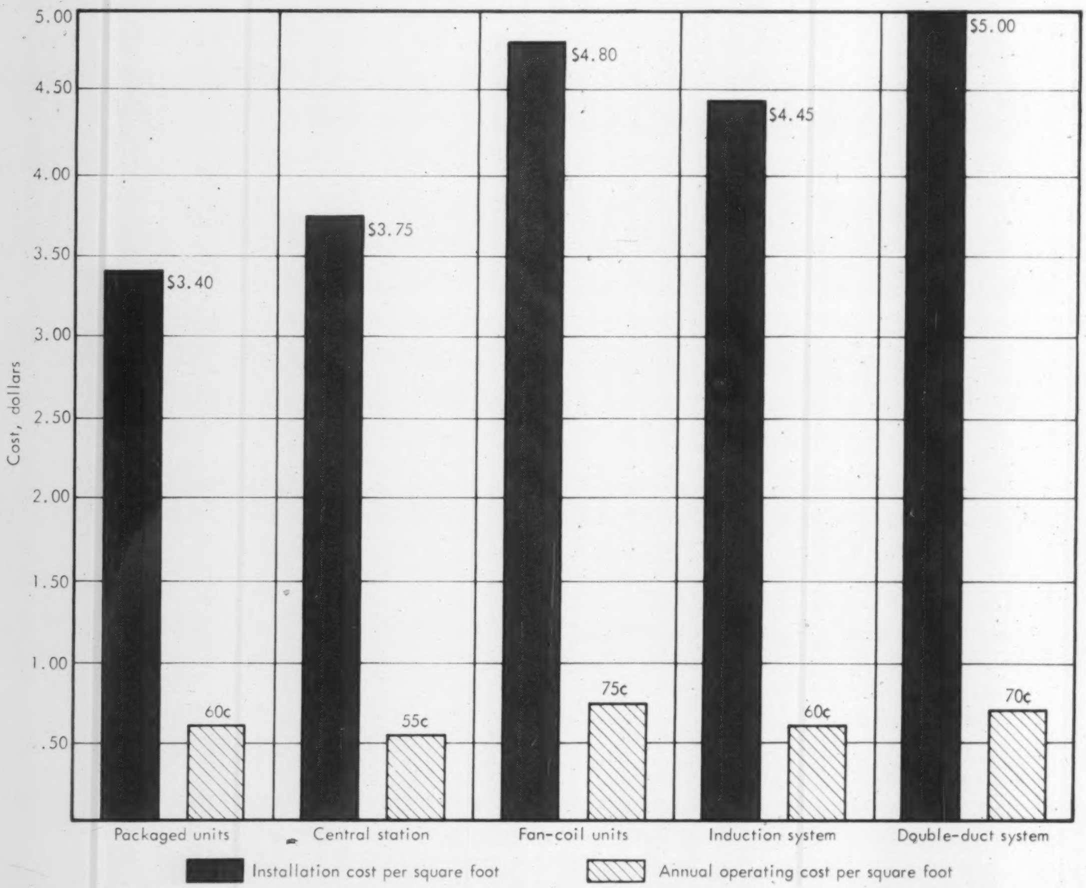
3) The pressure drop through the circuit should be evaluated with the utmost possible accuracy, using exact pipe lengths, including all valves and fittings and making due allowance for water density changes with temperature. ‡

To sum up —

don't depend on

"rules of thumb"

Hospitals: *A Challenge To Air Conditioning Engineers*



1 COMPARATIVE COSTS for installation and operation of various systems commonly used in hospital year 'round air conditioning are shown above. Text compares these systems in relation to the extent to which they fulfill unique requirements of hospital demands

By JOHN A. HOLBROOK
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● Here is information by which to evaluate proposed or existing hospital year 'round air conditioning systems. Hospitals, like all special-use structures, have specific requirements all their own. The first consideration must be the supply of a proper environment to individual patient's rooms. Laboratories, operating rooms, and similar areas would normally be treated separately. This article describes the needs of the large areas where patients are housed, and tells frankly how each of the systems commonly used — packaged units, central station systems, fan-coil units, induction and double-duct systems, — can be expected to serve these needs.

Mr. Holbrook was for some years administrative engineer for Presbyterian-St Lukes hospital, Chicago, and has had wide experience in the heating, piping and air conditioning field. He is a member of HPAC's board of consulting and contributing editors, and a registered professional engineer in Ohio, Minnesota, and Illinois.

THE DESIGN of hospital air conditioning systems involves all of the requirements of proper application normally associated with environmental control in any large multi-room structure. Because of the unique functions served by a hospital, however, this type of building presents further challenges, which must be countered by a careful consideration of needs and possible solutions.

This summary is concerned only with the question of supplying conditioned air to a large number of patients' rooms of similar character; a problem not unlike that met in air conditioning an office building except that the requirements are generally more stringent. Areas within a hospital such as operating rooms, laboratories and other special-purpose rooms would require individual consideration.

List Room Air Conditioning Needs

The general requirements for patient-room air conditioning are listed below, not necessarily in the order of their importance but in the order in which they might logically be considered.

1) The installed system must be one which will provide true year 'round air conditioning. Both summer and winter air must be tempered, and a combination of heating and cooling functions must be effected during intermediate seasons as well as during certain hours of the day. Proper air conditioning may also require that some areas of the building be supplied only with heated air while others are being cooled.

2) The system must be economical, not only of initial and operating costs but of space as well, since the desired end is always that of providing a maximum number of rooms with maximum usable floor space.

3) The system must offer positive temperature control on an individual room basis, both for patient comfort and to satisfy the changing requirements of medical care.

It follows then that equipment must be installed which will operate under conditions of low loads to forestall the possibility of temperature cycling on mild days. On such days equipment which would normally operate at peak loads would fluctuate between full-on and full-off, producing intolerable temperature changes.

Quality of Air is Vital

4) Humidity must be controlled. Therefore not only sensible cooling but latent heat removal must be included.

5) Proper air motion must be insured so that drafts or stagnant air will not be encountered. A minimum air change pattern of 25 cfm per patient is necessary.

6) The capacity and efficiency of the air filtering system must be proportional to the expected outside dirt load. It should be remembered that dirt passed by the filters eventually drops in the apparatus and ducts, or in the patient room, from which it must eventually be removed.

7) The combination of condensation and foreign material on a coil often develops odors. Equipment which contains wet coils should be easily cleaned.

8) Many medical authorities state that staphylococi infection is transmitted through air movement. Recirculated air conditioning systems are not accepted by many designers and/or codes, because of the possibility of bacterial transmission.

Five Systems Commonly Used

The system-types generally in use today are a) package, or self-contained units, b) central station units which supply conditioned air from remote locations, c) individual room fan-coil units, d) induction, or combination air-water systems, and e) the double-duct system.

All of these requirements must be satisfied as nearly as possible if the hospital is to be provided with an adequate, functional, and truly economical system of air conditioning.

Package Units Cool, Ventilate

Packaged unit air conditioners of the type considered here provide direct or duct-transferred cooling for summer use, plus winter ventilation. The optimum location for the cooling equipment is one adjacent to the rooms supplied.

Units installed without return air ducts, as some are now, use only outside air, except for small amounts which may be returned by means of an open access on the cabinet itself.

In such an installation operating costs may become excessive. The installation of return air ducts reduces the cost of operation, allowing the units to function ecomonically within the limits for which they are designed. Further financial and space expense must be considered, however, because additional winter heating must be provided.

The flow of air to a specific room may be controlled to a certain extent by means of properly installed dampers which also vary the cooling effect delivered to that room. The control of humidity is more difficult, since an average discharge temperature to the zone served must be taken.

Air flow is positive and entirely adequate in a well-designed system. Air filters supplied with the units are usually of a cleanable or disposable variety and can be adequate if requirements are not too stringent. Further filtering can be accomplished by the installation of a unit for that purpose in the discharge duct.

Since self-contained units operate with a single cooling coil, odor production can be localized and corrected with proper and timely cleaning of the element. Noise level can be kept within allowable limits if due regard is given to the special problem encountered in rooms immediately adjacent to the cabinet.

Installation and operating costs of this and other systems are compared in Fig. 1.

Central Station Systems Add Benefits

Central station single-duct systems having cooling machinery remotely located in basement or equipment rooms provide approximately the same benefits as do systems employing package units, with additional space savings and in most cases a somewhat more flexible operating range.

The central station system provides summer cooling but ventilation only during winter months unless additional heating equipment is incorporated. Zone control in a well designed system is excellent, and air movement control is possible within the limits of the installed damper system.

As with the package system, odors are localized and can be easily controlled with a proper coil cleaning schedule. Since the designed capacity of the system can be matched to the building's requirements, equipment can operate at the desired low-level load.

This type of system must provide an average discharge temperature to a zone or block of rooms, so that humidity control is restricted to a zone, rather than a room, basis.

With equipment remotely located, adequate filtering can be accomplished with the installation of a filter unit for that purpose. In larger, multi-floor installations, ducts closest to the coil would be necessarily large. Present practice, however, allows proper duct sizing with a minimum loss of usable space. The noise level of such a system should be low.

Fan-Coil Units Are Space-Savers

Fan-coil units located beneath windows in each patient's room provide the advantages of satisfactory air movement with a sizeable saving of space in most cases due to the elimination of ductwork. Each unit, containing a coil and fan plus a filter, circulates conditioned room air, and where provision is made, a certain amount of outside air, taken in through a window or through special exterior access.

In climates subject to more extreme winter temperatures, it may be that the single coil cannot carry the heating load alone, in which case a radiator or convector would be installed. This would probably be necessary in the majority of cases.

Since water piping is comparatively small, and the units themselves compact, such an installation is considered space-saving. In more elaborate units, a mixing valve installed in the line allows for continuous fan operation and a resultant improved air circulation pattern.

In less complex systems, the fan operates on an on-off cycle and room temperature variation may be increased.

Air filtering may be less effective than in the case of the previous systems due to size restrictions. Two disadvantages may arise, the first being the high noise level inherent in some units and the second a loss of fan effectiveness when the outside wind direction and velocity produce excessive drag.

Induction System Serves Year 'Round

The induction, or combination air-water system is the first of those under consideration which provides adequate year 'round temperature control without additional aid from an extraneous heating system.

Using a remotely located chilled and heated water source to supply under-window units, the system provides primary air, pre-conditioned by means of a central dehumidifying-reheater arrangement, under high pressure to individual room mixers.

The system operates on demand of individual room thermostats, so that the requirement for simultaneous heating and cooling of separate rooms is fulfilled. Since the primary air is delivered with a controlled humidity and secondary air acquires additional cooling, terminal humidity can be closely controlled.

Room mixing units are compact, and the relatively small size of the spiral ducts plus the fact that no additional room heating units are required means considerable space saving.

Each room receives and exhausts wholly outdoor air, so that minimum air transfer between rooms is attained. Air is exhausted to the outside, and is made up by means of the primary air supply. Centrally located equipment allows for adequate filtering and should result in a low noise level if room units are carefully selected.

Odors can be controlled by coil cleaning at the equipment site.

Double Duct Systems Flexible, Efficient

Double-duct systems provide heated and cooled air at high pressure through separate ducts to individual mixing boxes where pressure is reduced and the desired mixture delivered to the room. Such an installation allows for both summer cooling and winter heating, and because of centrally located sources will operate under conditions of low loads, insuring flexible air delivery during intermediate periods.

Since heated and cooled air is mixed at the point of use, all air to that point must be pre-conditioned, indicating a need for extensive filtering and humidity control apparatus at the source location.

Two systems of delivery ducts are required, with a single return air system. The extensive equipment needed, plus the additional ductwork may give rise to space limitation problems, even though the ducts are of comparatively small diameter.

Air movement is such that very little initial transfer between rooms will be experienced, but economy of operation will require use of recirculated air. Odor control and air filtration can be accomplished easily at the equipment site. Noise level within the rooms should be satisfactory, and the installation allows for flexibility of design in the delivery of air.

BROAD COMPARISON of air conditioning systems in relation to hospital requirements is tabulated below

	Year 'Round Capacity	Space Economy	Temperature Control	Air Motion	Air Filtration	Patient Atmosphere Isolation*	Odor Control
Packaged Units	Summer cooling, winter ventilation	Additional heating units needed	By dampers (zone)	Positive	Minimum	Satisfactory unless air is recirculated	By coil and drip pan cleaning
Central Station System	Summer cooling, winter ventilation	Additional heating units needed	By dampers (zone)	Positive	Minimum	Satisfactory unless air is recirculated	By coil and drip pan cleaning
Fan-Coil Units	Summer cooling, some winter heating	Heating units may be required	By room thermostats	Good, barring excessive outdoor air effect	Minimum	Satisfactory	Many coils, may be difficult
Induction System	Adequate for summer & winter	Compact units & small ducts	By room thermostats	Positive	Can be adjusted to conditions. Good	Excellent	By cleaning one large coil
Double-Duct System	Adequate for summer & winter	Extensive ducts, but of small diameter	By room thermostat	Positive	Can be adjusted to conditions. Good	Satisfactory unless air is recirculated	By cleaning one large coil

*Economies will usually dictate that packaged units, central station systems, and double duct systems will require recirculated air

"Good Piping Cost Estimates Demand Basic Understanding of Terms"

● Developing estimating data for piping labor is a major concern to all engineers involved in the design, installation, or replacement of piping systems or components. Good cost estimates require an understanding of definitions of such terms as man hours expended — in relation to the proper assignment of labor time units to such items as fittings, flanges, system erection. All these must be related to the factors which will affect a difference in cost — for instance the effect of actual physical location of the installation. Literature offers a good source of man hour information from which standard labor outputs can be developed, but much more correlation is needed.

The author is associated with an organization* which has as an avowed purpose just such correlation of cost data. Readers are invited to contribute information from their own experiences on this subject by writing to the Editor, at 6 N. Michigan Ave., Chicago 2, Ill.

By E. JOHN MARK
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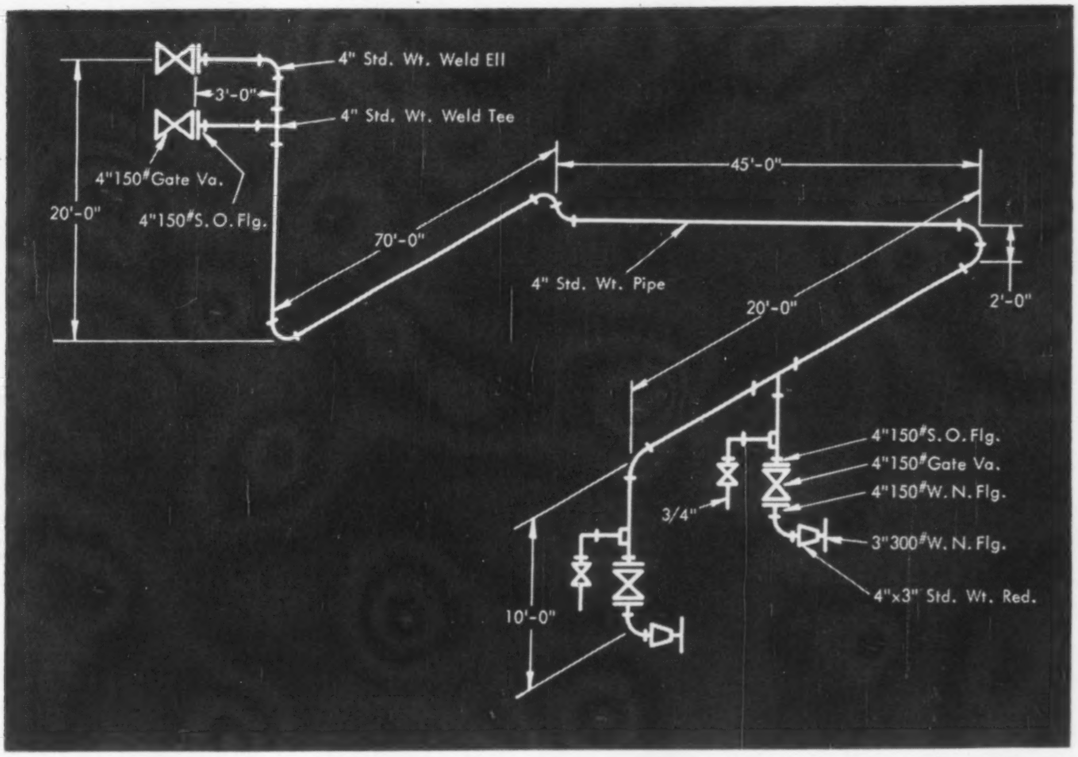
ESTIMATING piping costs is a subject of major interest to all engineers. Much has been published in recent years on the subject. However, when examining published costs the variance of data presented poses a major problem of how to use the cost information under the circumstances and conditions prevailing.

Whether the engineer works for a contractor, consultant or design group, process or manufacturing company, the man hours in a piping system are many times difficult to estimate realistically. This often is the result of too much heresay data, improper

TABLE 1 — PIPE FITTING MAN HOURS for installation of several fittings of various size are tabulated below. Source numbers refer to references listed at end of article

	Standard Welding Tee					W. N. Flange, 150 lb Schedule 40				
Source	1	2	3	4	5	1	2	3	4	5
Pipe size in.										
2	4.15	3.90	6.00	3.65	4.20	2.35	2.05	2.00	2.25	2.20
4	7.15	7.50	10.80	8.45	7.50	3.65	3.70	3.60	5.15	3.60
6	10.65	9.90	16.20	12.00	10.20	5.20	4.80	5.40	6.80	4.70
10	18.20	16.50	27.00	19.00	17.10	8.85	7.60	9.00	11.20	7.90
12	21.30	19.50	32.40	26.00	21.00	10.40	9.10	10.80	14.75	8.80

*The American Association of Cost Engineers, Chicago-Midwest Section



1 PIPING SYSTEM diagram above requires material listed immediately to right. Five different data sources estimated total man hours required to install this system as noted at far right in table

Bill of material	Data source	Piping man hours
4 — 4 in. 150 lb Flgd. Gate Valves		
2 — 4 in. 150 lb Weld Neck Flg.	1	171.5
4 — 4 in. 150 lb S. O. Flg.		
2 — 3 in. 300 lb W. N. Flg.	2	188.8
9 — 4 in. Std. Weld Ell		
2 — 4 in. Std. Weld Tee	3	139.8
2 — 4 x 3 in. Weld Red.		
2 — ¾ in. 3000 lb Spls.	4	164.8
2 — ¾ in. 3000 lb Elbows		
2 — ¾ in. 600 lb Gate Valves	5	161.5
6 — ¾ in. Sch. 80 Pipe Nipples		
173 ft 4 in. Sch. 40 B.E. Pipe		

definition of work included in man hour data, or lack of standard man hour data to which labor factors can be applied to adjust output for local labor conditions, construction conditions, and complexity of design.

Reference Should Be Man Hours

To develop estimating data for piping systems the basic data should be in man hours. However, once this data is set up, labor unit prices for various components of a piping system can be established. Each system has its own use.

A contractor may well want man hours estimated as a check against actual job requirements; a company may use labor unit prices, being only interested in total dollars required for lump sum work by a contractor.

For this article the man hour unit is the basic unit to be discussed, realizing that it can be used as a yardstick of efficiency regardless whether labor unit price or man hours output for any piping component is the basis of the costing engineer's estimating data.

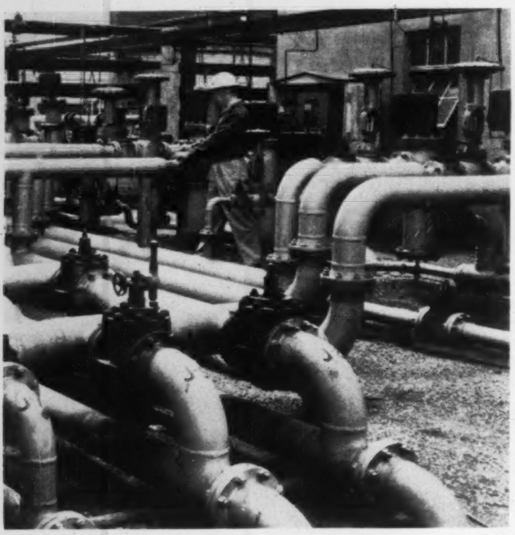
What Constitutes Man Hour Requirements?

Man hour requirements for a pipe fitting can be defined as the *time needed to receive, store, distribute for use, fitup, weld (or thread for screwed fittings), and erect.* Flange labor, in addition to the above defined labor, includes installation of a gas-

"To develop estimating data for piping systems, the basic data should be in man hours."

ket and bolt-up. Valve labor includes handling, erection and line up on pipe racks but no bolt-up for flanges.

Definition of man hour requirements for pipe is more difficult. *Pipe man hour requirements are based on handling and erection, with additional man hours for each weld or threaded connection.* Man hours for piping are affected by physical location; for example, overhead, above grade, or below grade pipe runs. Definition and cost data should reflect these major conditions.



MAN HOURS required for piping installation vary with actual physical location of pipelines and fittings

Piping man hours currently published for erection of pipe provide little information relative to the effect on man hours for various physical conditions of construction or location. It is in this area that definition of work developed man hour data is greatly needed.

Table 1 is a tabulation of man hours for installation of several fittings of various sizes. Significant variance in man hour requirements for fittings is indicated by the various references given. Assuming these fitting man hours are all defined on the same basis, it demonstrates clearly that the data in literature is a mixture of different labor efficiencies.

To overcome this problem of varied man hour data for installation of piping components, more definition in any published or developed labor data should be given to possibly determine standard man hours for known conditions. In this way man hours could be adjusted by efficiency or work factors.

Figs. 1 and 2 show several piping systems taken from the references listed. Each drawing shows the total man hour requirements for the installations based on the man hour data given in the references.

Data Shows Substantial Variations

Both the examples illustrated show man hour totals which vary significantly. This same pattern exists many times when bids are secured from contractors and compared to a company's check estimate. Further, all sources shown indicate an honest evaluation of costs as experienced by the author preparing such data and represent actual expenditures to be expected.

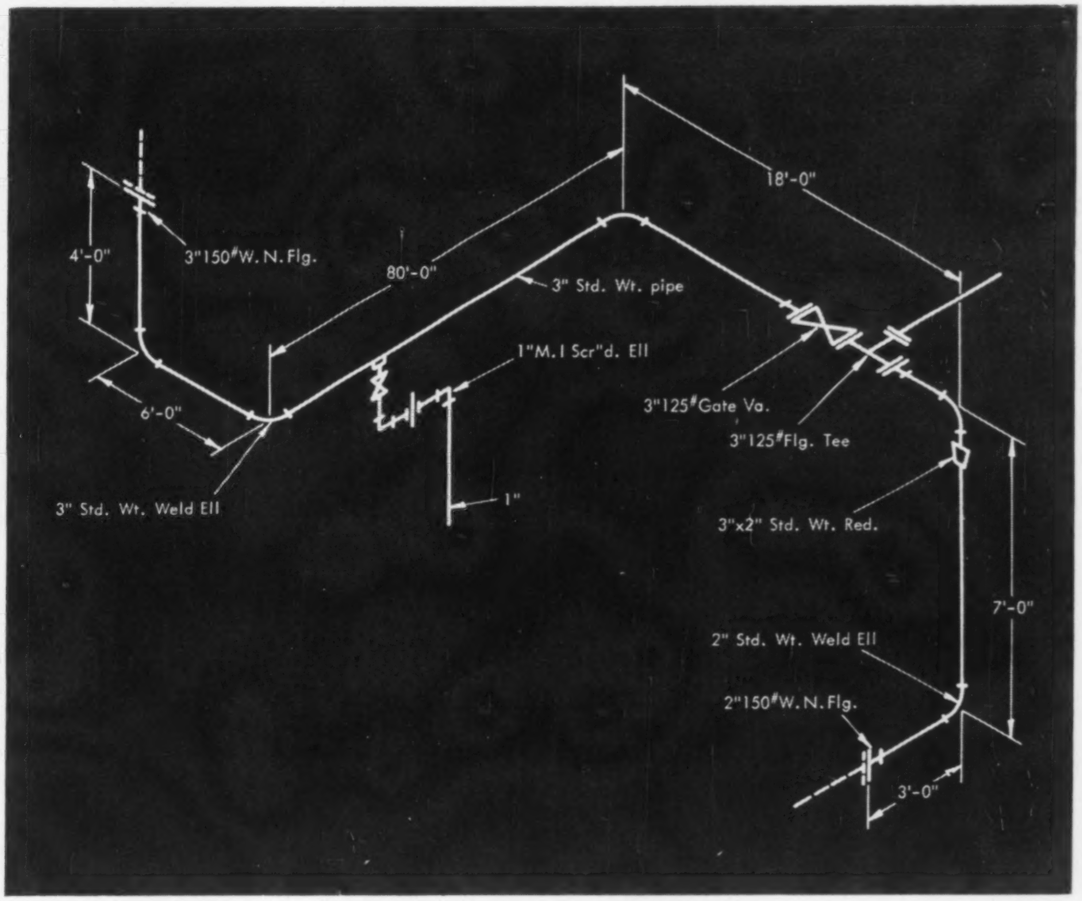
The problem is to separate, therefore, the effect of various conditions of construction or location from the source data being analyzed.

Fig. 2 shows in detail some of the variance in man hour totals and the various individual piping components. In reviewing the man hours shown, it is apparent that what work one source includes under a unit man hour for a fitting on pipe run, may be at variance to another source, even though arriving at similar man hour totals.

Need Definitive Information

It can be clearly seen that estimating pipe work is a difficult task. To safely protect a company's investments or expenditures, the preparation and evaluation of estimating data for piping systems requires greater effort on the part of the cost engineer. The need for piping estimating data defining man hour requirements for basic construction and design conditions, should be promoted. It is hoped that readers will contribute additional comments and information which can be correlated to improve the tools of engineers preparing piping estimates. ǂ

"The problem is to separate the effect of various conditions of construction or location from the source data being analyzed."



2 FOUR SOURCES listed as references at end of article estimated man hours needed to install number of fittings itemized in bill of material, as shown at far right. Installation would be for system shown above

	Data source 1	 3	 4	 5
Bill of material		Man hour estimates		
4 — 3 in. Weld Ell Std. Wt.	16.00	24.00	18.00	16.00
1 — 2 in. Weld Ell Std. Wt.	3.00	4.00	2.65	2.80
1 — 3 × 2 in. Weld Red Std. Wt.	3.60	5.00	4.65	3.60
1 — 2 in. Weld Neck Flg., 150 lb	2.25	2.00	2.25	2.20
4 — 3 in. Weld Neck Flg., 150 lb	12.00	12.00	12.20	11.60
1 — 3 in. 125 lb Iron Flgd. Valve	3.00	2.10	2.20	.80
1 — 3 in. 125 lb C. I. Flgd. Tee	3.00	2.10	5.00	2.40
1 — 1 in. 3000 lb Cpl.	1.50	2.60	.40	1.50
1 — 1 in. Gate Valve (Scrd.)	1.00	2.60	.40	1.00
2 — 1 in. M.I. Union	23.60	12.00	45.80	18.90
118 ft — 3 in. Sch. 40 Pipe	1.20	5.20	.80	2.00
Total man hours	70.75	76.20	94.75	63.80

References

1) Company A — Estimating data, unpublished
2) Company B — Estimating data, unpublished
3) W. G. Clark, *Accurate Way to Estimate Pipe Costs,* included in "Cost Engineering In The Process Industry," by C. Chilton. McGraw-Hill Book Company, Inc., 1960, pp 193-196
4) H. Herkimer, "Cost Manual For Piping and Mechanical Construction," Tudor Publishing Company, Inc., 1958
5) O. R. Roberts, "How To Estimate Piping Labor," Petroleum Refiner; March, 1960; pp 207-212

Readers are invited to contribute information from their own experiences in the field of piping cost estimating by writing the Editor, at 6 N. Michigan Ave., Chicago 2, Ill.

● For certain heating and ventilating applications, and for some cooling installations as well, adequate ventilation rates can be obtained by means of a central air duct main, equipped with continuous slots on either side and closed at the far end. This article describes the principles which must be considered in designing this kind of system — as applied to its use in a large poultry house. Here the advantages of low initial cost, large entrainment of room air, and the introduction of large quantities of outside air combine to make the system both effective and economical.

Mr. Stevenson has had wide experience in the design and installation of heating, ventilating, and air conditioning systems, having done contracting work and been associated with several engineering and architectural firms.

How to apply

Slotted Duct Air Distribution

By F. F. STEVENSON
Design Engineer

THE slotted duct method of air distribution has certain advantages worth noting with reference to many industrial and commercial projects. Such a method can be used for both heating and ventilating, and for cooling.

Air distribution by this means is via a single main or several ducts. Where only the one is used, it would normally be located along the center or long axis of the building to be heated.

Let us take the case of a system designed for installation in a large commercial poultry house. Slot air discharge itself is of course nothing new, but the writer has never noticed it in farm building ventilating systems, and in such applications its advantages are readily apparent.

Here the single duct would be located in the center of the poultry house, about 8 or 10 ft above the floor, in order to discharge air in both directions through slots cut in either side of the duct.

Such an arrangement could, of course, also be used for summer cooling, if desired.

For this type of building, the slot system has four things to recommend it:

1) Low initial cost.

2) Comparatively large volumes of air are delivered with a short throw.

3) Due to its high aspect ratio, the system achieves a large entrainment of room air, which is desirable in poultry and animal houses.

4) Once placed in balance, it requires little attention or adjustment.

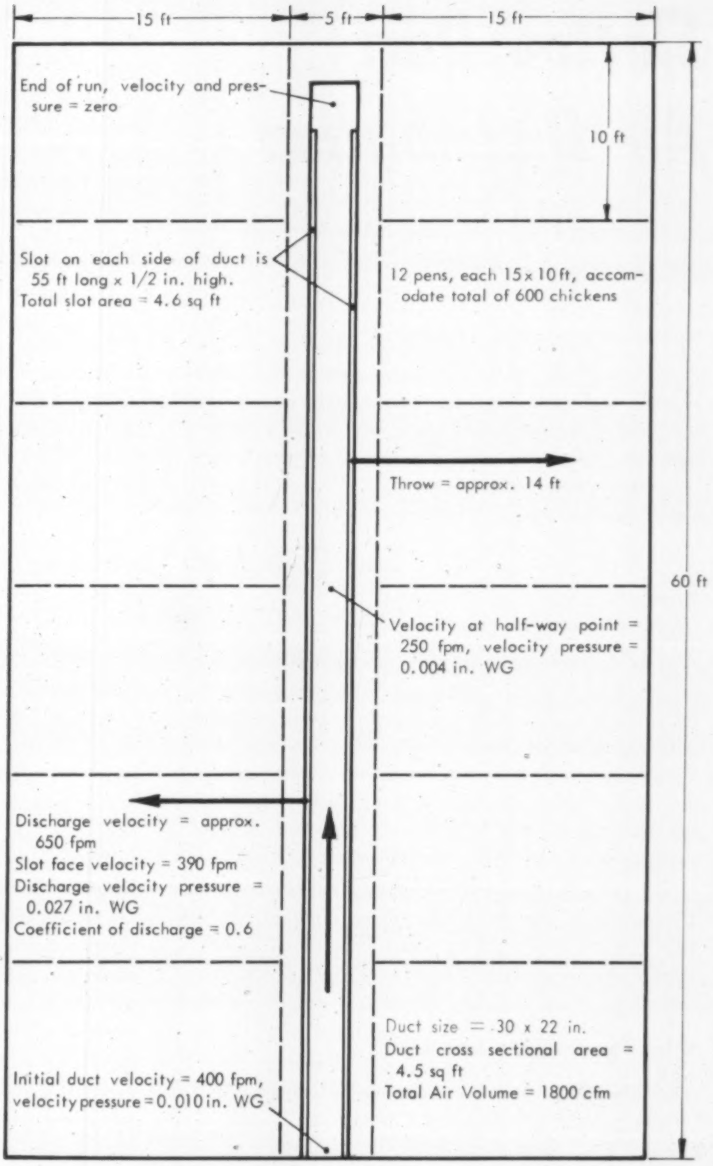
Two Types Are Used

There are two basic designs of slotted ducts in use today: a) ducts having a constant cross section, and b) tapered ducts. Both are closed end ducts.

The constant cross section duct seems to be the more frequently used of the two. With a constant cross sectional area, air velocity within the duct is constantly diminishing, reaching zero at the end.

Initial velocity should be kept low — at 1000 fpm or less. With this type of duct, the slot should be sized for a high outlet face velocity; up to 50 percent higher than duct velocity. A common height (or width) of the slot is $3/4$ to $1\frac{1}{2}$ in., with lengths from 15 or 20 ft up to 60 or 70 ft. The aspect ratios of the slots range from 200:1 up to 1000:1, which permits short throws and high room air entrainment.

The crucial item in calculating for a constant cross


15 ft
5 ft
15 ft
End of run, velocity and pressure = zero
10 ft
Slot on each side of duct is 55 ft long x 1/2 in. high. Total slot area = 4.6 sq ft
12 pens, each 15 x 10 ft, accomodate total of 600 chickens
Throw = approx. 14 ft
60 ft
Velocity at half-way point = 250 fpm, velocity pressure = 0.004 in. WG
Discharge velocity = approx. 650 fpm
Slot face velocity = 390 fpm
Discharge velocity pressure = 0.027 in. WG
Coefficient of discharge = 0.6
Duct size = 30 x 22 in.
Duct cross sectional area = 4.5 sq ft
Total Air Volume = 1800 cfm
Initial duct velocity = 400 fpm, velocity pressure = 0.010 in. WG

1 FARM BUILDINGS, such as 60 x 35 ft poultry house at right, may have heating and ventilating requirements to which the narrow slot type of air distribution system can be applied. Single duct would be located in center of building, have slot on each side to discharge air in both directions. Drawing shows air distribution factor calculations which are discussed in text

section duct is the angle of throw in the horizontal plane. If the angle is much less than 90 deg, the air distribution will be poor. Some parts of the space will get practically no air while others are oversupplied.

Without turning vanes, the discharge through the slot is dependent entirely on static pressure. Most designers, of course, include the pressure loss due to the turn of the air flow in their calculations.

The coefficient of discharge through a sharp edged slot will have a value of about 0.6. Many slots in constant cross section ducts are equipped with a short throat in back of the slot, or they may be constructed with a rounded inlet. This will increase the coefficient of discharge to perhaps 0.8.

Such arrangements may interfere, but not necessarily, with the basic controller of the cross section slot — that is, the slot height adjuster. This device is merely a sliding panel made of sheet material which can be moved up and down in very small increments. It is usually fitted on the duct interior, but may be placed on the outside in some industrial installations. Adjustable "flappers" have also been

Slotted Duct Air Distribution

used, but since these may change the direction of flow, they may be undesirable.

Velocity May Cause Trouble

Air flowing in a duct of constant cross section, with a fairly high initial velocity, may tend to bypass the slot area close to the duct origin. If this happens, then the slot in this portion of the duct must be adjusted to its largest size or height.

As the air flows through the duct, its velocity will decrease, and slot height should decrease correspondingly.

Another factor to be considered is the static pressure regain which occurs in the duct run. Unless the friction loss is very high, there is a considerable regain, beginning about 1/3 of the way down the duct from the origin. Net regain may reach its height at about the mid-point in the duct run. Thus, the slot may have to be well throttled at this point.

The trailing half of the duct may require either a larger or smaller slot opening, depending upon static pressure regain, friction, and other losses, including the discharge loss.

It is well to remember that without turning vanes, the air depends on static pressure alone to force its way out through the slot, and sufficient pressure must be available for this purpose all along the run.

The Effect of Slot Area on Throw

If a good angle of throw is to be obtained in a duct of constant cross section, the ratio of slot area to the duct cross sectional area, $A_s:A_d$ must be carefully checked. The value of A_s, of course, increases with added slot length.

A_d may in effect be increased with an increase in air volume, and varies also with air velocity. Keeping the duct velocity low helps greatly in getting a good angle of throw.

The ratio $A_s:A_d$ should be maintained below unity if possible. If the slot length is too great to permit this, it may be feasible to actually divide it in half, so as to have two slot sections serving the area.

Cites Throw Angle Article

G. L. Tuve and A. Koestel, whose excellent article on slots appeared in Heating, Piping & Air Conditioning in 1948,[1] show a graph which gives throw angles for various ratios of A_s and A_d for various distances along the run.

From this graph, we find that with a 25 ft long slot, 3/4 in. in height, and a slot-duct ratio of 0.75, a throw angle of approximately 65 deg will be attained at a point about 1/10 of the distance along the run. The throw angle will be 85 deg when the run is 90 percent completed.

In another, shorter slot, with a ratio of 0.65, the angle is 70 deg at the near point. Of course, turning vanes would materially improve the angles, but as stated above, vanes may interfere with balancing panels used in some applications.

Tapered ducts theoretically give better results than the constant cross section type because the air velocity is constant. However, it is impossible from a practical standpoint to size these ducts so as to get a constant velocity throughout the run.

Koestel and C. Y. Young, in their article published in 1951[2] give valuable data on ratios and angles of throw from tapered ducts. The throw angles are no better than those obtained with constant cross section ducts, and turning vanes are recommended. Turning vanes should be practical with tapered ducts, because theoretically the constant duct velocity eliminates the need for balancing devices. However, many designers, when it comes to a choice between turning vanes and balancers for such applications as this, will choose the latter.

As to length of throw, little authoritative data is available, with the exception of R. D. Madison's article in Heating, Piping & Air Conditioning in 1946[3] and the writer's article "Air Discharge from Narrow Slots" published in 1941[4].

Mr. Madison supplies two graphs on which he plots the throw from slots evolved from his formula which is also given in the article. These, however, are restricted to slots of 12 ft length or less, and information on longer openings may be required.

Data on this matter has also been published in the Heating, Ventilating, Air Conditioning Guide, but my own and others' experience in this work seems to indicate that this data requires further verification.

Regarding the general subject of throw, such authorities as Fellows, Nelson, and Hendrickson[5] say that the discharge from a slot is based on static pressure in back of the slot, and on nothing else. Mr. Koestal says that the flow from a slot is based on total pressure, for all types.

Of course, when turning vanes are used, the velocity pressure is used as well as the static pressure. Turning vanes, when properly designed and installed, reduce the loss in turning the air stream. A good size for such units is 2 in. deep, spaced 1¼ in. apart.

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[1] *Numbers pertain to references at end of article*

Again, the greater the aspect ratio of the slot, the shorter will be the throw, because the discharge air presents a wide thin pattern with a large area in contact with room air, which impedes the throw. This gives excellent entrainment of room air, and results in good mixing of supply and space air. In addition, a short throw is often desirable in certain cooling applications.

Friction Loss Is Important

The relation between duct friction loss and the conversion of velocity pressure to static pressure is important to the design of slots in ducts with a constant cross section.

One cannot use a standard friction chart to calculate the loss through a duct of constant cross section and of constantly diminishing air velocity. Such a process would involve a laborious ft by ft calculation.

H. M. Hendrickson, many years ago, developed an empirical factor to use with a standard friction chart; to wit:

Loss through duct (in. WG) $= 0.25LF/100$
where
L = length of duct, ft
F = initial friction loss, in. WG/100 ft

This factor applies to ducts 50 to 75 ft in length. The factor for shorter ducts is approximately 0.325.

This equation can be used only for the full length of the duct. To find the loss from the duct entrance to the halfway point, the writer uses a factor of about 0.45 to 0.55, with L divided by 2. From the halfway point to the end of the duct, the factor varies from 0.06 to 0.10, with L divided by 2 and the value of F equal to the friction loss at the halfway mark.

In calculating static pressure regain, it should be remembered that air volume through the duct is constantly decreasing and also expanding. This may seem paradoxical, but the weight of air decreases as it expands, and at the end of the run the density of the air is therefore quite low.

However, this effect is so small compared with other variations in air distribution practice that it may be ignored, and the regain calculated.

Professor Hendrickson also developed an empirical equation to find the length of throw from long narrow slots. It is based on the assumption of a slot 12 ft long by 1 in. high (for an area of 1 sq ft) which handles 960 cfm, with a jet velocity of 1200 fpm and a coefficient of discharge of 0.8. Under these terms, the length of throw will be 20 ft. Throw is said to be terminated when the air velocity falls to 50 fpm.

From these figures, the following empirical equation was evolved:

Throw, ft $= [(\text{jet velocity})\ (\sqrt{\text{area, sq ft}})]/60$
where
Jet velocity = velometer velocity in fpm.

Hence, for a coefficient of discharge of 0.6, the value of the empirical factor becomes 70.

This equation will give good approximate results for long ducts and high aspect ratios, for a slot height of not more than 2 in.

In changing the value of the coefficient of discharge, it is assumed that the volume of air delivered is the same, but the jet velocity through the slot will be higher, with a value of 0.6, due to the increased vena contracta effect through the slot.

Approximate Turning Loss

In the net static pressure calculations, some designers calculate the turning loss in the air flowing through the duct and out through the slot. An adequate degree of accuracy can be obtained more simply, however, by assuming the turning loss to be 50 percent of the velocity pressure at any given point in the run.

Apply Principles to Farm Building Ventilation

Let us now examine a slotted duct installation for a poultry house (Fig. 1). Assume an area of 1800 sq ft, with a space allowance per bird of 3 sq ft, or 600 chickens in the pen. Allowing 3 cfm ventilation air per bird, we require 1800 cfm.

We will install a duct with a ½ in. high slot, 55 ft long, on either side. Each slot, then, must deliver 900 cfm. Therefore, the face area of the slot will be

$[(55)\ (12)\ (0.5)]/144 = 2.3$ sq ft

and the face velocity of 900 divided by 2.3 will equal 390 fpm. With a coefficient of discharge of 0.6, we will have a jet velocity of 650 fpm.

Using the equation for throw:

$[(650)\ (\sqrt{2.3})]/70 = 14$ ft (length of throw)

This throw will do nicely for the depth of the pens.

We then decide on a duct for a velocity of 400 fpm with the volume of 1800 cfm. A 30 × 22 in. duct (cross sectional area 4.5 sq ft) has an equivalent diameter of 28.2 in., and a friction loss of 0.015 in. WG.

The loss through the run of 55 ft will be

$[(0.25)\ (55)\ (0.015)]/100 = 0.002$ in. WG

This friction loss can be regarded as negligible, with most of it occurring during the first half of the run. Velocity pressure at the start of the run will be 0.01 in. WG, and at the end will equal zero.

The static pressure regain, then, will be 0.01 in. WG, but this is so small that it can be dismissed from further calculations.

Necessary pressure needed for a discharge velocity of 650 fpm is about 0.025 in. WG, to which must be added a 50 percent factor for turning loss for a total of 0.0375 in. WG.

If we size and power the fan for this figure, plus the other losses in the air distribution system, it will be satisfactory.

To calculate the angle of throw, the ratio of slot area to duct area is required. Because the duct discharges air from each side, we must divide by 2, or 2.3/2.25 = 1 for practical purposes.

Air Distribution Only Fair

From the Tuve and Koestal chart mentioned earlier, we find that the angle of throw will be 58 deg at a distance 1/10 of the way along the run, and 75 deg when the run is 90 percent completed. This means that the air distribution will be only fair, and to better it, the answer lies in a larger duct.

Examine Heat Gain Factors

Let us see how our selection of air volume accommodates the sensible and latent heat gains and losses. The bird population is 600, each weighing about 5 lb, which at an indoor temperature of 50 F will mean a sensible heat emission of about 40 Btu per hr per bird. Assuming a design outdoor temperature of −10 F, the heat loss will be about 35,000 Btu per hr.

The internal heat gain from the birds will be 20,000 to 25,000 Btu per hr, and the gain from lighting may be set at 8000 to 10,000 Btu per hr. Thus we have an internal sensible heat gain of some 30,000 Btu per hr opposed to a loss of 35,000, for a net loss of 5000 Btu per hr.

With 1800 cfm, the supply air temperature can be comparatively low. Good design calls for a two-speed fan motor, to reduce the air volume as required.

The absorption of latent heat presents no problem, as all supply is outside air with a low specific humidity during the winter. A reduced air volume would of course be used with caution, since ammonia fumes from the litter accumulation must be dissipated.

Summer Temperatures Increase Load

In summer, the design outdoor temperature is 95 F, and we desire an indoor temperature of equal value. The solar heat gain to the structure may be set at 5000 Btu per hr, and the sensible heat gain from each bird at 9 Btu per hr (5400 Btu total). Lighting adds another 8000 Btu. Thus the total heat gain will be 18,400 Btu per hr.

Since the air supply is not cooled, we must use 95 F air.

Therefore, to find the temperature rise:

$$18{,}400/[(1800)\ (1.04)] = 10\text{ F increase}$$

where

1.04 = specific heat of air × density × 60

So that the resulting pen temperature will be 95 F plus 10 F or 105 F.

This is too warm, and the structure should be equipped with a supplemental air supply to treble the amount of air introduced when the temperature rises to 85 or 90 F. The added supply can be provided by propeller fans, placed high on the wall and discharging from short duct outlets. These should be thermostatically controlled. During hot periods the fans could operate at night to introduce cooler air, in order to stave off morning temperature rise as long as possible. They should logically be two speed units.

Calculate Weight of Water Vapor

To handle the summer latent heat load, we calculate that each chicken emits a moisture heat amounting to about 37 Btu per hr, for a total load of 22,000 Btu per hr.

Translated to weight of water vapor, this amounts to 22,000/1050 = 21 lb, or 147,000 gr per hr.

Supply air at 95 F and 53 percent relative humidity (a rather extreme condition) has a moisture content of 130 gr per lb. The weight of the air supplied is 7740 lb per hr, so each lb of air must absorb about 20 gr of the moisture from the birds.

This will increase the moisture content of the pens to 150 gr per lb, or to a relative humidity of 60 percent, which is high. However, when such an outdoor condition prevails, the supplementary fans will be turned on, increasing the amount of air to reduce the split to about 10 gr. This will afford a better relative humidity in the space of a little more than 50 percent, which is acceptable. ⌗

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[4] Stevenson, F. F., "Air Discharge From Narrow Slots," Heating, Piping & Air Conditioning, Vol 13 No. 5 p. 308 and Vol. 13 No. 6 p. 368 (1941)

[5] Stevenson, F. F., "Evaluate Sensible, Latent Heat Gains for Close Temperature, Humidity Control," Heating, Piping & Air Conditioning, Vol. 31 No. 6 p. 131 (1959)

• The typical two-pipe reverse-return system used for refrigerant piping applications has certain inherent disadvantages which may cause problems in some applications. Here is a proposal for a one-pipe system design which, says the author, affords the following gains: 1) no limit on the percentage of heat transfer fluid which may be directed to any one unit, 2) varying the flow to any one unit will not affect others on the same line, and 3) greater heat transfer by means of greater flow and higher velocity.

Proposed: A One-Pipe Brine Distribution System

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A CAREFUL STUDY of the reverse-return type of system shows that there are some disadvantages inherent to the design. Chief among these is the fact that flow to each unit on the line is limited to a fixed portion of the total flow, and also that a change in the adjustment of any one control valve at any one unit affects the flow to all other units.

This was illustrated strikingly to the author through an experience with a street line system which furnished chilled water to several hundred customers. When regulating a new unit in this system, it was necessary to open the control valve rather wide. Each time this was done, numerous complaints were received from other users. Surely if the turn of a valve on a system as large as this will produce such an effect, the disadvantage will be at least as apparent on smaller systems.

Method Also Has Advantages

Of course it should be pointed out that the two-pipe reverse-return principle also affords advantages. Entering liquid temperature at each unit on such a loop is equal to that at every other unit. This proposal for an alternative method also recognizes that there are some disadvantages which will attend its use.

A typical distribution system of the two-pipe reverse-return arrangement is shown in Fig. 1. This is a type of system which might be used in a waxed paper making plant, where chilled brine is supplied to a number of large calender rolls around which the continuous paper sheet is processed.

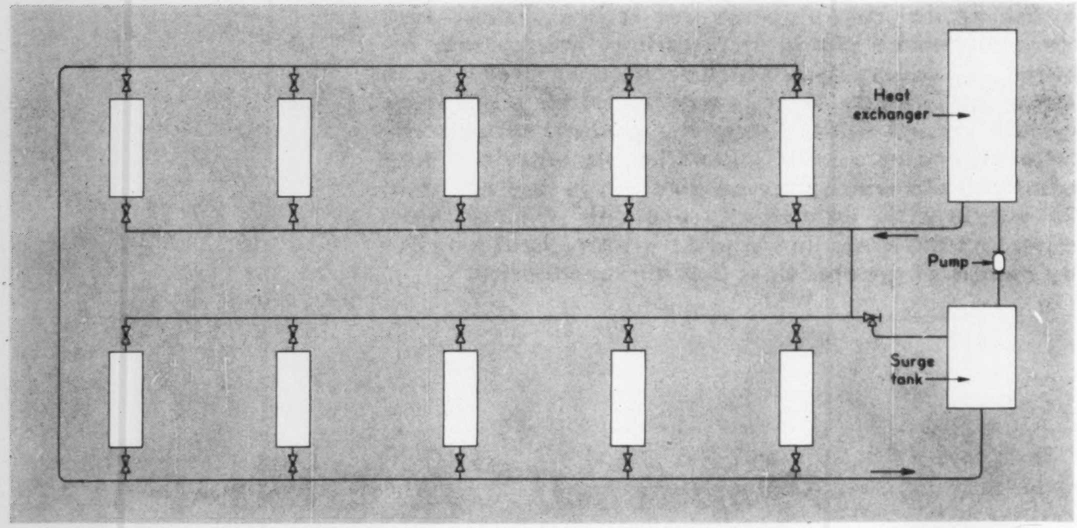
Let us assume that the system supplies brine to 10 calenders, as shown in Fig. 1, at a supply temperature of 10 F. Brine is returned at 15 F, and the total quantity circulated through the loop is 250 gpm.

With the system as shown in Fig. 1, each calender is limited to 25 gpm of chilled brine, and the adjustment of the brine flow to any one calender cannot be changed without affecting the flow to all other calenders.

"Wiping Action" Is Necessary

It is important to remember that for good results in heat transfer, it is necessary that an effective wiping action of the heat transfer fluid against the heat transfer surface be attained. This can be achieved only by a turbulent liquid flow, and to obtain that turbulence, high liquid velocity is required.

Furthermore, with reference to this particular system, the amount of heat transfer surface of a calender in contact with the web is very limited. Therefore, it is essential to have as high a rate of



1 TWO-PIPE reverse return layout is commonly used for brine distribution system, insures consistent entering brine temperature at each unit, but has some disadvantages

heat transfer as possible.

If the desired temperature of the web is 40 F, the heat removed, for the system in Fig. 1, would be 3025 Btu per sq ft per hr. This is predicated on a temperature difference of 27.5 F (40 F minus the average brine temperature of 12.5 F).

Propose One-Pipe Alternative

The alternative distribution system diagrammed in Fig. 2 is based on the same design criteria as used for Fig. 1. The new method places no restriction as to the quantity of brine which may be circulated to each calender. It is possible to circulate the full quantity, or 250 gpm, to any one unit, or to divide it in any desired balance between the 10 units.

Therefore, two principal advantages are obtained: 1) the total brine flow to the calenders is not limited, and 2) the brine flow to any one or all calenders can be changed without affecting the flow to the other units.

One disadvantage is immediately apparent; to wit, the brine temperature supplied to the calenders is not everywhere the same. This is offset, however, by the fact that the brine *velocity* to a calender can be increased, thereby increasing the heat pick-up and making the cooling operation more effective.

For instance, increasing the circulation of brine through the calenders from 25 to 50 gpm would increase the velocity 100 percent. The higher velocity would create a turbulent flow and increase the heat transfer coefficient from 110 Btu per sq ft per hr per F up to 160 Btu per sq ft per hr per F.

May Use Booster Pump

A practical limit will be reached relative to the maximum brine flow through any one unit due to the pressure drop through the restricted nozzle to the calender. If it should be necessary to increase the flow to any one or all calenders for greater production, a booster pump may be installed at each calender.

A system designed on the basis of this proposed method can have such booster pumps installed at all units on the line.

If the brine flow is increased to 50 gpm, the mean temperature in the calenders would be as shown in Table 1.

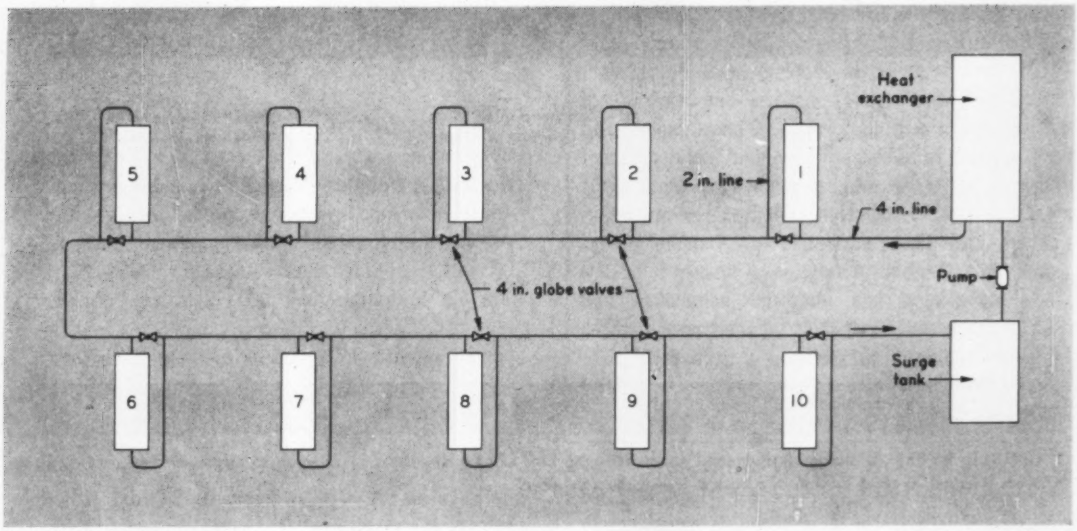
Increasing the flow to more than 50 gpm would not change the mean temperature in the calenders, but it would increase the velocity, which in turn would increase the heat transfer factor.

For instance, if the flow were increased to 100 gpm, the heat transfer factor would be raised to 200 Btu per sq ft per hr per F — almost twice the factor as would be obtained at 25 gpm.

The 4 in. globe valves shown in Fig. 2, when fully opened and when operating under the conditions of the design criteria, create a pressure drop of 2.28 psi, which may not be enough to create sufficient flow through the calenders. Therefore, with the valves in-

TABLE 1 — MEAN TEMPERATURES at each of calenders in one-pipe system would vary as indicated with a brine flow of 50 gpm

Calender No.	Mean temperature, F	Calender No.	Mean temperature, F
1	10.25	6	12.75
2	10.75	7	13.25
3	11.25	8	13.75
4	11.75	9	14.25
5	12.25	10	14.75



2 ONE-PIPE system offered as alternative, offers advantages of "unlimited" brine flow to each unit, possibility of changing flow to one unit without affecting others

stalled as shown, the brine flow through each unit can be increased by throttling of the respective valves.

Compare Heat Removed

Let us now compare the amount of heat removed with each system. With the reverse-return system, the amount was 3025 Btu per sq ft per hr in each calender.

Heat removal by the one-pipe method, for a flow rate of 50 gpm, would be as shown in Table 2.

Since a higher heat transfer rate can be obtained by increasing the velocity of flow by means of booster pumps, an increase in flow rate to 100 gpm would produce the results that are shown in Table 3.

Heat Extraction Varies

A comparison of the results as shown in Table 2 indicates that the rate of heat extracted in a distribution system as shown in Fig. 2 is increased by a varying amount — 33 percent more in calender No. 10, where the mean brine temperature is highest, up to 54 percent more in calender No. 1, which has the lowest mean brine temperature.

Greater cooling with an increased flow rate of 100 gpm will produce even greater differences, of course, as indicated by a comparison of the heat removal values in Table 3.

There is a final advantage of the alternate distribution system. With such a method, the quantity of brine flow does not vary, regardless of the number of calenders in operation. This permits the heat exchanger to operate at high efficiency at all times.

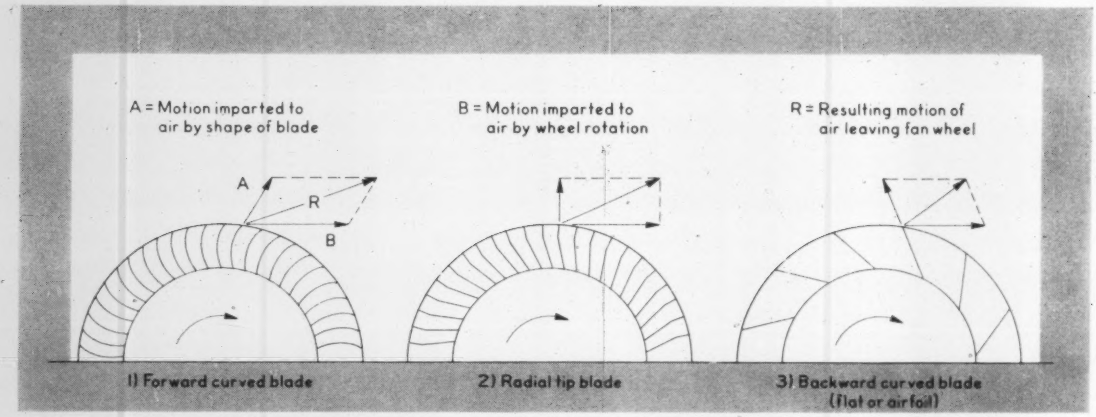
With the reverse-return system, flow of brine will be retarded when some of the calenders are not in operation. ‡

TABLE 2 — HEAT REMOVAL from each of 10 calenders on one-pipe system at flow rate of 50 gpm would be as shown below. This compares with figure of 3025 Btu per sq ft per hr for each calender in reverse-return system

Calender No.	Temperature difference, F	Heat removed, Btu per sq ft per hr
1	29.75	4760
2	29.25	4680
3	28.75	4600
4	28.25	4520
5	27.75	4440
6	27.25	4360
7	26.75	4280
8	26.25	4200
9	25.75	4120
10	25.25	4040

TABLE 3 — HEAT REMOVED from each calender in a one-pipe system with flow rate of 100 gpm is indicated below

Calender No.	Temperature difference, F	Heat removed, Btu per sq ft per hr
1	29.75	5950
2	29.25	5850
3	28.75	5750
4	28.25	5650
5	27.75	5550
6	27.25	5450
7	26.75	5350
8	26.25	5250
9	25.75	5150
10	25.25	5050


A = Motion imparted to air by shape of blade
B = Motion imparted to air by wheel rotation
R = Resulting motion of air leaving fan wheel
A
R
B
1) Forward curved blade
2) Radial tip blade
3) Backward curved blade (flat or airfoil)

1 THREE TYPES of blade design used in centrifugal fans can be described in relation to air motion vectors A, B, and R, with R equal to final motion of air as it leaves the fan wheel

How to evaluate

Centrifugal Fans In Air Handling Equipment

THE centrifugal fan, or "air pump" is frequently called the heart of the air conditioning system. This is reason enough to assure us that a thorough understanding of centrifugal fan types, construction, design, testing, operation, maintenance, and performance is of prime importance to anyone involved with an air conditioning system of substantial size — designer, installer, or operator.

Of course much information is already available, and centrifugal fans are often the subject of considerable discussion. Generally speaking, these are the areas of most frequent consideration:

Forward *vs* backward curved blade fans
Class I, II, III, and IV *vs* fan selection by tip speed
Ball *vs* sleeve bearings
Static *vs* dynamic balance
The use of fan performance tables
The effect of dampering on fan performance
The effect of speed change on fan performance

This discussion deals with these topics from the standpoint of fan application in "cabinet type" unitary air handling equipment.

It is well to note at the outset, however, that there are several types of fans used in air handling work, and for various reasons. Of the several advantages which accrue through the use of centrifugal units, one of the most important results from the characteristic of decreasing hp requirement with increasing pressure.

Therefore, when dampers and ducts are added to an air handling unit, the common procedure is to rely upon a centrifugal fan to furnish the necessary air volume.

By ROLF H. SEIBERT
Marlo Coil Co.

Three Types Are Available

Centrifugal fans are of three types, classified by the curvature or slope of the impeller blade — the angle of which mainly determines the operating characteristics. The basic types are:

1) Forward curved blade
2) Radial tip blade
3) Backward inclined (or curved) blade

Fig. 1 illustrates these three varieties. Note in the first sketch that the blade tip is inclined forward, in the direction of the wheel rotation. The radial tip blade is inclined slightly backward at its origin, but curves toward the outer extremity so that the tip is almost perpendicular to the wheel rim.

In the sketch at right, the blade is inclined backwards, or away from the direction of rotation. Recognizing this difference is of prime importance in checking to see that a fan wheel is rotating in the right direction and that the fan is properly installed.

Vectors Show Air Movement

Returning to Fig. 1, we see that air moves from the fan housing inlet and through the fan blades in a radial movement (shown by vector *a*) which is determined by the inclination of the blades. Air also moves with a "forward" motion (vector *b*) imparted to the air between the blades by the rotation of the fan wheel.

These two forces — radial and forward movement — combine to produce the resultant motion *r* of the air leaving the wheel.

The vectors are drawn to relative force scale in the three parts of Fig. 1. The resultant *r* has the greatest relative length (or greatest force) in the drawing of the forward curved blade. It follows then, that for the same volume of air in cfm, the forward curved blade fan would run at a lower speed to produce the same resultant air velocity, *r* at the same static pressure.

Actually, the forward curved blade fan runs approximately 47 percent slower for a given performance than will the backward inclined unit. It is therefore often quieter and can use smaller and less expensive shafts and bearings. This is one of the reasons why the forward curved blade fan is commonly used in air conditioning units.

Consider Basics in Fan Design

Each of the three types of centrifugal fans are designed with due consideration to these variables: widths of wheel and housing; type and diameter of wheel; number of blades; and the angle, thickness, and curvature of each; inlet and outlet design and housing shape; type of backplate; cut-off location; and the shaft diameter and type plus bearing type and location.

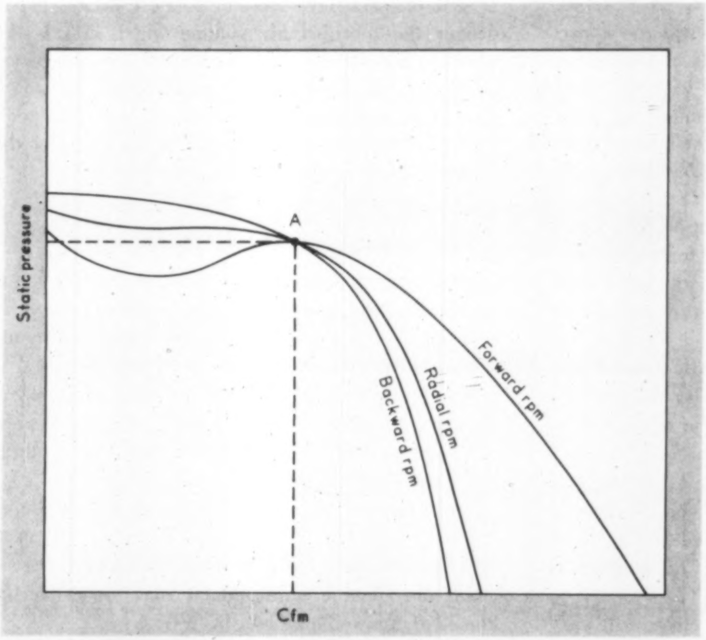
● Here is important, basic information on centrifugal fans — including an explanation of the types available, their classification, methods of balancing, and the effect of speed and resistance changes on their operation. In addition, useful information on how to use fan performance tables and avoid the pitfalls of some common errors in interpretation is included. While this discussion is undertaken from the standpoint of centrifugal fan use in "cabinet" type unitary air conditioners, the data will be of general interest to all concerned with the design, installation, operation, and maintenance of air distribution systems in which these fans are used.

Mr. Seibert is a graduate of Clarkson College of Technology, and holds a professional engineering license in the State of New York.

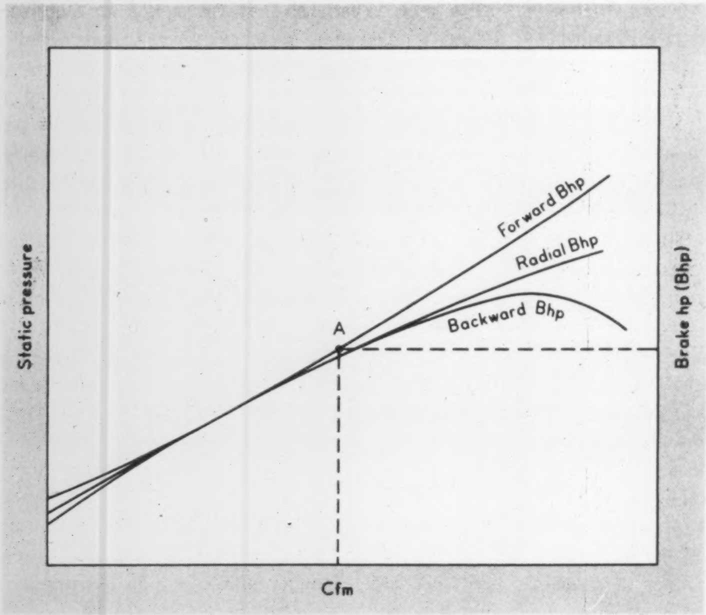
After conducting his tests for a particular design in accordance with established codes, the fan manufacturer publishes rating tables. These are merely another form of presentation for data obtained from basic test relationships.

Visualize a psychrometric chart, with all of the possible combinations of wet and dry bulb temperatures, air velocity, distribution, and so on which fall within the comfort zone. Likewise, all these items of fan design can be combined in a variety of ways to offer good fan performance.

Fan testing requires that relationships be estab-



2 CONSTANT SPEED CURVES for three types of fan wheels vary somewhat for same static pressure and volume handled, as shown at left. Each type can be sized so as to deliver specified air volume which creates a specified SP, as indicated by point *A*



3 BRAKE HORSEPOWER curves for each type of fan wheel are plotted as shown here. At point *A*, each type, for given air volume and resulting static pressure, will require specific Bhp

lished for certain items over a range of the fan's capability, to wit:

Static, velocity, and total pressure
Air volume and outlet velocity
Fan speed, and power input and output
Static and mechanical efficiency.

The basic definitions of these terms are generally well known, but for purposes of review are included in the box on page 178.

How To Use Constant Speed and System Curves

The use of constant speed curves and system curves for any centrifugal fan unit can be explained by association with any performance table for this type of unit.

For purposes of this example, we will use a performance table made up on the basis of total static pressure. This should not be confused with total pressure. Total static pressure is the sum of the static pressure created by air flow through the unit, plus the system static pressure created by air flow through the remainder of the system.

Within the performance table, select an rpm which appears rather frequently in the table for a given size unit. At every listing of this rpm, you will find a combination of cfm and static pressure this air volume will create.

If these combinations of cfm *vs* static pressure are plotted for this same rpm using cfm as the ordinate and static pressure as the abscissa, the result will be a constant speed curve for these values.

Such a curve tells us that at this rpm (and only at this rpm) the fan will deliver any combination of cfm and SP which falls on this curve at one point (and only at that point) so long as nothing is changed in the system.

The shape of the constant speed curve will vary somewhat for the same cfm and SP, depending upon the type of wheel — forward, radial tip, or backward inclined — as shown in Fig. 2.

Each of these three types of fans can be selected to deliver the specified air volume which creates the specified SP. Assume that this is point *A* on the curve. Of course, as explained previously, each fan would operate at a different speed.

At the given speed for each fan, we can plot the brake hp curve as shown in Fig. 3.

Fixed Resistances Always Oppose Fan

One important thing to remember is that the fan is always working against the static pressure created by the air passing through the fixed resistances in the unit cabinet, such as coils, filters, plenum loss, and at times, sprays or dampers. For instance, on a system designed for 3240 cfm and 1-$3/4$ in. WG static pressure, approximately $3/4$ in. SP could be due to these fixed resistances in the unit.

If an error of 50 percent were made in calculating the remaining 1 in. WG SP, then the total static pressure created by a 14-$5/8$ in. diameter forward curved blade fan (double width, double inlet) in delivering the 3240 cfm would be 1-$1/4$ in. WG.

Therefore, what would really be needed would be a fan which would create a static pressure of 1-¼ in. WG when moving 3240 cfm.

The question is, whether we are really designing a system with a unit which has a proper fan speed for creating 1-¾ in. WG static pressure when moving 3240 cfm. We are, only if the system is so designed that when 3240 cfm of air is pumped through it, this amount of air will create 1-¾ in. SP across the fan.

Single Cfm/SP Combination Available

But the fan is a dumb object. It only knows that at the specified rpm, in this case 975, it will deliver a combination of cfm and SP in this fixed system at one point and one point only on its constant speed curve, depending upon the design of the system.

In this case, as outlined in Fig. 4, the fan will deliver more air at 975 rpm than was anticipated, because the ducts are larger than actually needed and offer less resistance to the air flow than was calculated. What will happen?

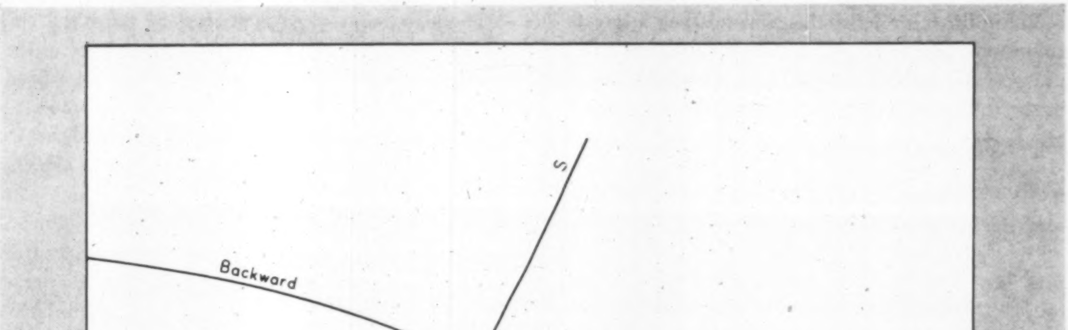
Curve "S" in Fig. 4 is the system characteristic curve. If we were to test this system and plot the resulting static pressures created by various volumes of air, the result would be a parabolic curve as shown.

Determine Fan Performance Point

Only at point *A*, the intersection of the system curve and the fan constant speed curve, will we find the actual performance of this unitary fan. We thought the fan would operate at point *B*.

Actually, the 50 percent error in calculating the variable static pressure increment means that we would deliver 3870 cfm with 1.80 Bhp. In this case, since we had figured Bhp to be about 1.55 (3240 cfm at 1-¾ in. SP) and selected a larger motor (say 2 hp) accordingly, no overload would occur.

The solution would be to slow the fan to 807 rpm, at which point, *B*, we would get the 3240 cfm for a static pressure of 1-¼ in. WG actually required.



4 SYSTEM CHARACTERISTIC CURVE "S" can be plotted for any fan handling specific volume of air at resulting SP. Text explains why, when fan was expected to operate at point *B*, point *A* is actual point of operation due to error in calculating variable SP increment

The fan type used for this example is a forward curved blade unit. Today, a probable majority of cabinet type air handling units are furnished with this kind of fan. The "flatter" pressure volume curve for this type of wheel, as shown in Fig. 2, means that for any one unit, necessary changes in cfm delivered affected by balancing or damper adjustments can be made while maintaining a more nearly constant static pressure. On the other hand, the backward inclined blade fan offers the advantage of a maximum Bhp at a given speed, regardless of any decrease in resistance. It should be realized that the flat pressure characteristic curve has the disadvantage of producing large volume changes with relatively small changes in pressure.

How Centrifugal Fans Are Rated

Over 25 years ago, the National Association of Fan Manufacturers (combined in the Air Moving and Conditioning Association in 1957) agreed to standardize centrifugal fan construction. These were the classes of fans established:

	Maximum total pressure, in. WG
Class I	3-¾
Class II	6-¾
Class III	12-¼
Class IV	More than 12-¼

Within the meaning of this classification, a specification requiring 3.8 in. WG total pressure meant that a fan capable of furnishing 6.75 in. WG total pressure would be used, since the requirement was beyond the limits of Class I.

These Definitions Are Important

Total pressure — the rise of pressure from the fan inlet to the fan outlet, composed of two pressures: static and velocity (TP = SP + VP).

Static pressure — pressure against the sides of the interior of a duct through which air is flowing, exerted by the air in a direction perpendicular to the direction of flow. Think of it as a bursting force.

Velocity pressure — a pressure created by the rate of flow in the direction of air flow. It follows, then, that the pressure above the static pressure is due to the air velocity.

Power input — the hp delivered to the fan shaft.

Power output — the hp needed to produce a required air volume and total pressure.

Outlet velocity — the rate of air flow at the fan discharge.

Air volume — expressed in cfm at the fan outlet.

Fan speed — designated in rpm.

Mechanical efficiency — the ratio of power output to power input, using total pressure.

Static efficiency — the ratio of power output to power input, using static pressure only. Static pressure is usually equal to about 87 percent of the total pressure for forward curved blade fans, at the normal operation point, the remainder being velocity pressure.

Obviously, a lighter and less expensive fan could be produced for 3.8 in. TP than for 6.75 in. Again, the pressure produced on measuring gages has little effect on the fan performance as such. What do have an effect are the stresses and strains imposed on the fan as a result of its rotational speeds, and for a given fan wheel, shaft, housing, and structural design, there will always be a maximum allowable speed. Above that speed, metal fatigue will occur.

This maximum speed multiplied by the wheel circumference yields the speed at the outer edge of the wheel, or maximum tip speed (TS). TS is not a fixed value within the limits of any fan class.

With the adoption of the new AMCA standard AS 1401, improvement in the application of this classification system should result.

Bearing Types Vary

A few words on the bearings used in various fans is appropriate here. Various considerations of fan design affect the type of bearing used in any one unit. Sleeve, ball, and split sleeve types are all used in various units, and the bearing arrangement and spans between bearings differ also.

There are qualifications for each. Ball bearings may be noisier than others at speeds above 550 rpm, but the additional noise may not be an important factor in system design. Again, ball bearings are susceptible to flattening through shock while in shipment. Ball bearings should be maintained about 1/3 full of grease, and can burn out if over-greased.

On the other hand, sleeve bearings, which are usually of the graphite impregnated sleeve type, can be oiled at will with no danger of over-lubrication, but generally require more frequent maintenance than the ball type. At some point in design, when high shaft speeds and heavy loads are combined, roller bearings will probably be used.

Balancing Is Vital to Proper Operation

It is important that centrifugal fans be in balance so that harmful vibrations may be minimized. Other-

TABLE 1 — MULTI-RATING TABLES, such as this one for 17⅞ in. diameter DWDI forward curved blade fan, indicate relationship between Cfm, SP, outlet velocity, speed, and Bhp

Volume, cfm	Outlet velocity, fpm	Static pressure, in. WG									
		½		⅝		¾		1		1-¼	
		rpm	Bhp	rpm	Bhp	rpm	Bhp	rpm	Bhp	rpm	Bhp
2023	700	426	.28	479	.36	526	.45	607	.62		
2312	800	423	.31	476	.40	524	.49	607	.68		
2601	900	419	.34	473	.44	521	.54	605	.74	679	.96
2840	1000	414	.37	468	.47	517	.58	603	.80	677	1.03
3179	1100	444	.41	464	.51	513	.62	599	.86	674	1.11
3468	1200	418	.46	463	.56	508	.67	595	.92	671	1.18
3757	1300	427	.52	465	.61	507	.72	591	.98	667	1.26
4046	1400	437	.59	472	.68	508	.79	587	1.04	663	1.32
4335	1500	449	.68	482	.77	515	.87	586	1.12	658	1.40
4624	1600	463	.78	493	.87	524	.96	587	1.20	655	1.48
5202	1800	488	.99	518	1.09	545	1.20	600	1.42	656	1.69
5780	2000	517	1.27	544	1.37	566	1.49	620	1.71	670	1.96
6358	2200	547	1.58	572	1.70	594	1.82	645	2.08	690	2.32

wise, and especially at higher speeds, damage may result to bearings, shaft, or drive belts.

Since it is not always possible to produce a perfectly balanced fan, it is important that post-fabrication balancing be undertaken. This is accomplished by dynamically balancing the wheel on its shaft in an electric balancing machine. Weights are used to counteract the effect of heavier areas of the wheel. Most balancing machines can handle fans of the size which would be used in cabinet air handling units.

Other methods of dynamically balancing centrifugal fans include dial gages for recording shaft deflections, and manual scribing.

Static balancing consists of checking the balance of the fan without its being run. With the motor disconnected, the wheel is turned slowly and allowed to come to rest. A mark is placed on the lowest point of the perimeter. If the same mark is still lowest after the second spin, the wheel is heavy at this point and counter-weights can be added. Such a method is of course less accurate than dynamic balancing and also slower.

Vibration is not always due to unbalance. Other factors, such as a sprung shaft, dirt on the blades, unmatched drive belts, or unbalanced fan or motor sheaves may be the cause, besides which worn or loose bearings may be permitting excessive play.

With the exception of the bearing failure, such causes can sometimes be counteracted by rebalancing by the field dynamic balance method. This is accomplished either with a dial type shaft deflection gage or by means of an ordinary pencil, held close to the revolving shaft to mark the protruding area as it turns. Such a procedure involves much trial and error, but may have to be used on installations where neither instruments or working space are available.

How To Use Fan Performance Rating Tables

In order to simplify selection of air handling units, "multi-rating" tables are commonly used. Such tables indicate the relationships between the quantity of air, static pressure, outlet velocity, speed, and Bhp. Usually a table is provided for each diameter and/or wheel width used.

Table 1 is an example of a multi-rating table for a 17-⅞ in. wheel diameter double width, double inlet forward curved blade fan.

The oulet velocity is determined from considerations of efficiency, allowable noise, and the most favorable point of operation. Centrifugal fans are designed so that the velocity pressure they create equals approximately 13 percent of the static pressure. Therefore

$$\text{Velocity pressure} = (\text{outlet velocity}/4000)^2$$

and

$$(OV/4000)^2 = 0.13\ SP$$

$$OV = 1440\sqrt{SP}$$

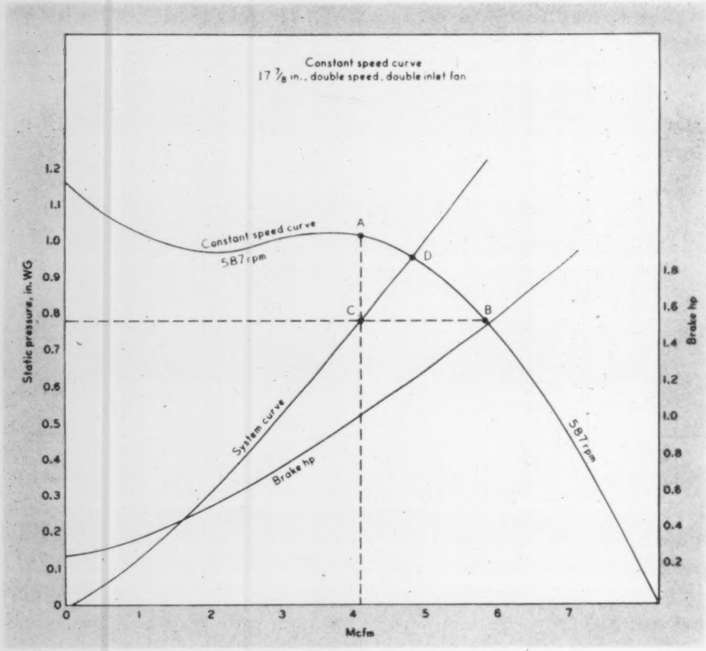
Fan rpm, included in the table, is used in evaluating the type of drive selected, plus any possible requirement for vibration isolators, and also to determine the tip speed of the wheel and in the construction of the constant speed fan performance curve.

Various multi-rating tables may be presented with cfm listed across the top and static pressure down the left or right side, or these positions may be reversed for convenience.

In Table 1, assume that a fan is selected to deliver 4046 cfm to create 1 in. SP. From the table, the fan speed is taken as 587 rpm and Bhp as 1.04. Assume that we have been conservative in our calculations of SP and suspect that it may actually prove to be ¾ in. W.G.

One might read down the rpm column under ¾ in. SP and interpolate the conditions for 587 rpm. At this point, the table yields 6180 cfm and 1.71 Bhp.

But the procedure is incorrect! If the original 1 in.



5 REQUIRED HORSEPOWER for fan at specified cfm and SP can only be determined by drawing constant speed curve for design rpm and system characteristic curve. Error in calculating SP will give false notion of operating point, as explained below

SP is for 4046 cfm, then the $\frac{3}{4}$ in. SP being checked should also be for 4046 cfm, rather than the 6180 figure above.

If the SP of $\frac{3}{4}$ in. is created at 4046 cfm the hp required by the fan will be between 1.04 at 1 in. SP and 1.71 at $\frac{3}{4}$ in. SP. To determine this point accurately, it is necessary to draw the constant speed fan curve (Fig. 5) at 587 rpm and the system characteristic curve.

Point *A* is the original selection of 4046 cfm, 1 in. SP, and 1.04 Bhp. A common error is to extend the $\frac{3}{4}$ in. SP horizontally to the right to point *B*, where the cfm reads 6180 and the Bhp 1.71. This is what occurred in the table above.

Now if the SP for the designed 4046 cfm is actually $\frac{3}{4}$ in. instead of 1 in., then the system characteristic curve will pass through point *C* instead of through point *A*, and consequently the real operating intersection is point *D*.

Here the cfm equals 4820 and the SP equals, 0.96 in., with 1.27 Bhp. This indicates that the possibility of overloading a fan is not so serious as might appear from an incorrect reading of a multirating table.

In actual practice, when it is found that the volume of air will be 4820 cfm instead of the designed figure of 4046 cfm, the fan would be slowed by means of an adjustable pulley to 508 rpm. At this speed, the volume of 4046 cfm creates a $\frac{3}{4}$ in. static pressure and requires 0.79 Bhp.

Dampering Affects Fan Performance

Now suppose an air handling unit has been installed in a system and is in operation. Assume the fan has a 17-$\frac{7}{8}$ in. wheel diameter and is a DWDI type, operating at a constant rpm.

A constant speed curve drawn for this unit would appear as in Fig. 6, with the point of operation at "1." The fan, of course, did not choose this point. It is determined by the intersection of the system characteristic curve with the constant speed curve.

The fan will deliver only one combination at a time of cfm and SP which falls somewhere along its constant speed curve. This point, "1," was governed by the system in which the unit is installed.

Closed Damper Adds Resistance

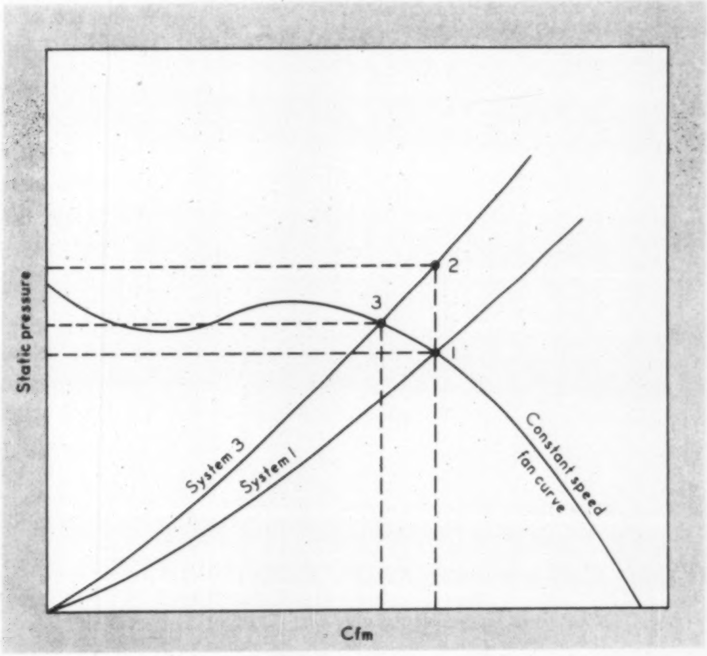
Now suppose we close a volume damper somewhere in the system. We have added a system resistance increase from "1" to "2". Since the fan is at constant speed, a new system curve will develop from the same origin and pass through point "2."

The unit will now deliver a cfm and SP determined by the point on the fan constant speed curve where the new system curve intersects it at "3." Note that the total increase in SP across the fan is 3 minus 1. This is less than the increase in system resistance 2 minus 1.

Lack of understanding of this data causes the common error in reading multi-rating tables as discussed previously. Of course the same result occurs in a system when filter cells slowly become clogged by accumulations of dust, dirt, and grease.

The constant speed fan curves and system curve in Fig. 7 indicate the effect a change in fan speed has on system characteristics.

In most heating, air conditioning, and ventilating



6 CONSTANT SPEED CURVE for fan of Table 1 appears as line labeled "system 1." Fan will deliver single combination of cfm and SP at one time, (point 1) but closing of damper will add resistance, result in new constant speed curve and new operating point (3)

systems in which the expected temperature range is between 0 and 125 F, it is assumed that the resistance (SP) varies as the square of the volume (cfm) being moved through the system. This condition creates a system characteristic curve which is termed a parabola of the second order.

When a centrifugal fan is operating in such a system, it is accepted that the fan operates according to the following laws:

At a constant air density in a constant system —

1) cfm varies directly as the fan speed (rpm)

2) SP varies as the square of rpm

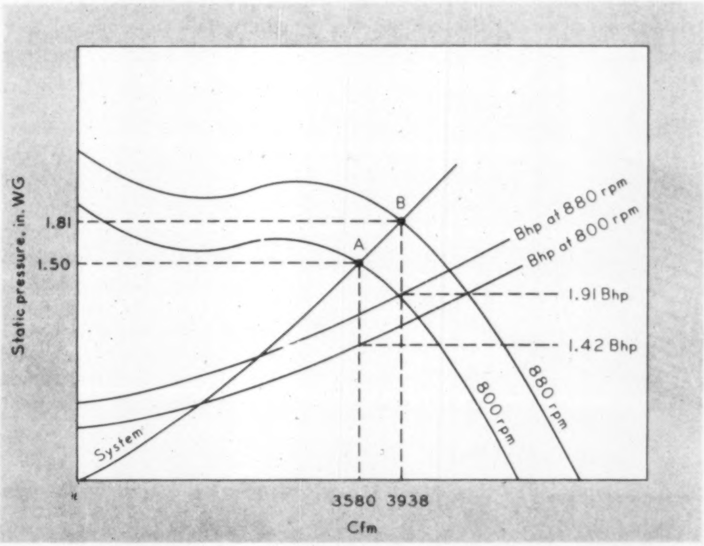
3) Bhp varies as the cube of rpm.

Before applying the laws, it is necessary to draw the system characteristic curve.

In Fig. 7, the system characteristic curve intersects the constant speed curve at point *A*, 800 rpm, 3580 cfm, 1.5 in. SP, and 1.42 Bhp. An increase in fan speed of 10 percent will mean 880 rpm, 3938 cfm, 1.81 in. SP, and 1.91 Bhp.

The same relationships exist for the opposite effect when the fan speed is reduced.

All of these are things which must be understood clearly in order to accurately evaluate the use of a particular fan in this type of air handling unit. Like the human heart, the centrifugal fan will do a tremendous amount of work when given the benefit of thorough, theoretical and practical knowledge. ǂ



7 FAN SPEED CHANGE affects system characteristics as shown by constant speed and system curves at left. Changes in characteristics will be in accordance with three basic fan laws reviewed above

● The use of plastic materials for specialized piping requirements, especially where a high degree of corrosion resistance is needed, can provide a number of advantages. There are some things which users of plastic piping should know — things which have a direct bearing on the proper selection of materials and the fulfillment of performance expectations. Here the author provides basic information on plastic and glass properties, and the structural and performance characteristics of glass reinforced plastic piping, and describes one way by which such pipe can be tested in an approximation of field conditions. The article is based on a paper presented by the author at the recent ASME Petroleum Mechanical Engineering Conference in New Orleans.

What you should know about

Glass Reinforced Plastic Piping

By R. M. LEVY
Esso Research & Engineering Co.

ASIDE from its corrosion resistance there are many other characteristics of glass-reinforced plastic pipe that make its use, in some installations, attractive. These characteristics include high strength, light weight, improved flow characteristics, resistance to paraffin deposition, low thermal and electrical conductivity, non-contamination of product, and ease and economy of installation.

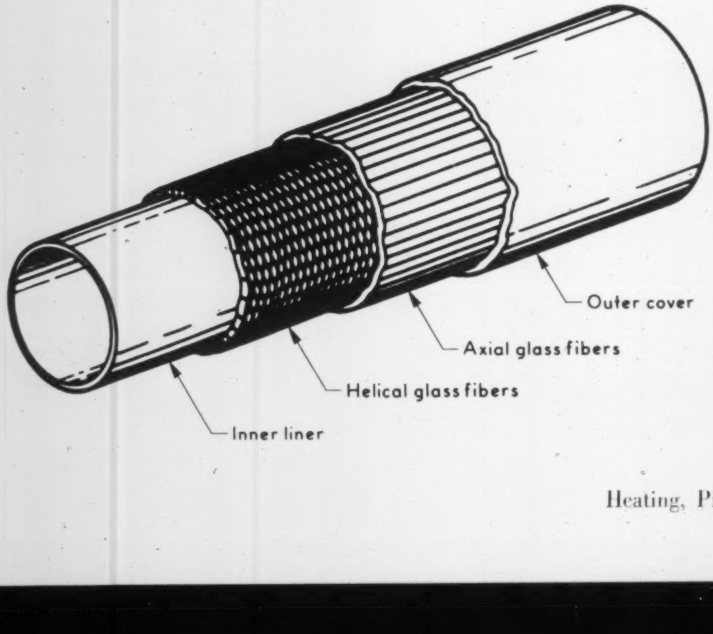
Unlike some other piping materials, glass-reinforced plastic presents a most complicated physical behavior pattern under the combined actions of stress, environment, and time. In addition, this pattern is affected greatly, not only by the individual behavior of the reinforcement material and the plastic, but by the interaction of the two materials.

Because the technology of glass-reinforced plastic is comparatively new, much remains to be learned of what is involved in this combined behavior.

This discussion will deal mainly with the properties of these materials, both alone and in pipe, and with some of the test methods used to determine the pipe characteristics.

Plastics Are Of Two Types

Because plastics generally fall into one of two distinct divisions — thermoplastic and thermosetting



1 EXTERNALLY WOUND plastic pipe, illustrated here, is one of two basic kinds, which differ chiefly by the method of fabrication. Other is made with internal mandrel casting method

— each with its own general properties, it is no more descriptive to refer to "plastic" pipe than it is to talk of "metallic" pipe. Specifications and references should be made to a particular generic type of plastic.

If possible, the trade designation should also be included since frequently manufacturing techniques and formulations change the final material properties appreciably. Table 1 lists the various types of plastics commonly found in piping and tube forms.

The thermoplastics may be softened upon heating and remolded to any given form and will still retain essentially all of their original properties when restored to original temperature. The major types presently being used in the manufacture of pipe are polyethylene, polyvinyl chloride, butyrate and "Kralastic" (a styrene-rubber "alloy"). Polypropylene, one of the newer thermoplastics, appears quite promising as pipe material[1].

Thermoplastic pipe has found wide application in the petroleum industry, mainly because of its good corrosion resistance and light weight. However, its use is limited to low-pressure service. Use at temperatures over 150 F or below 40 F is generally not recommended.

It is susceptible to cold flow and consequently must be supported almost continuously to prevent excessive deflections. In addition, it has a high coefficient of thermal expansion — on the order of 10 times that of steel.

Thermosetting Type Expands Use Range

Reinforced thermosetting pipe is designed to fill the need for corrosion resistant piping beyond the limitations of the thermoplastic variety. Thermosetting plastics, as the name implies, set or harden under heat to a final form which cannot be changed upon reheating.

Presently there are three types being used in pipe manufacture; polyester, epoxy, and phenolic.

TABLE 1 — VARIOUS TYPES of plastic currently available in pipe and tubing, divided into the two basic groups to cover areas of use

Thermoplastic	Thermosetting
Acrylic	Epoxy
Celluloses	Furan
Fluorcarbons	Phenolic
Polyamide	Polybutadiene
Polethylene	Polyester
Polypropylene	Melamine
Polystyrene	Silicone
Polyvinyls	

Since the resins used are generally brittle in nature and low in tensile strength, reinforcing is required. Reinforcing is usually in the form of glass fiber, although cotton, sisal, paper, asbestos, glass cloth and mat, and organic fibers have been used in making composite sections.

Actually, the plastic resins contribute relatively little to the strength of the structure. The main functions of the resin are those of stress transfer, protection for the reinforcement from external physical and chemical attack and, in the case of glass, protection from the abrasion of the glass on itself. In addition, the resin serves to stabilize the reinforcement filaments when the structure is put in compression.

The resins used vary between different pipe manufacturers. Their properties may differ according to resin suppliers, formulation, cure cycles and many other variables. Furthermore, the properties of cast resins are not necessarily representative of their performance in the reinforced plastic structure. Consequently, no attempt will be made to discuss resin properties here; much has been published in recent years[3,4,5].

Since most of the thermoset pipe being produced or in development is of glass-reinforced epoxy resin, the pipe specifically referred to in the remainder of this discussion is of this type, although much is applicable to polyester and other kinds of thermosetting pipe.

The Properties of Glass Reinforcement Materials

The glass fibers commonly used in reinforcements are made of borosilicate type of glass commonly referred to as "E-glass". The glass fiber when drawn is about 0.0002 in. in diameter. 204 fibers are usually drawn together to make a strand or end. 20 to 60 ends are then drawn together to form a roving for the pipe manufacture.

Now let us consider some of the properties of glass fiber when in this form[6].

Tensile Strength

Whereas the calculated theoretical values for the strength of fibrous glass varies from 1 to 14 x 10^6 psi (depending on the theory used), laboratory tests have yielded values of from 0.5 to 0.8 $\times$ 10^6 psi depending upon the care exercised.

However, 200,000 psi is probably as high as one can expect from commercial glass as received from the manufacturer. Further handling, before the final product is formed, could reduce this value to 100,000 psi.

Laboratory tests on the glass-reinforced pipe show the glass to invariably sustain the above 100,000 psi figure.

Elastic limit

Within the operating temperature range of GRP,

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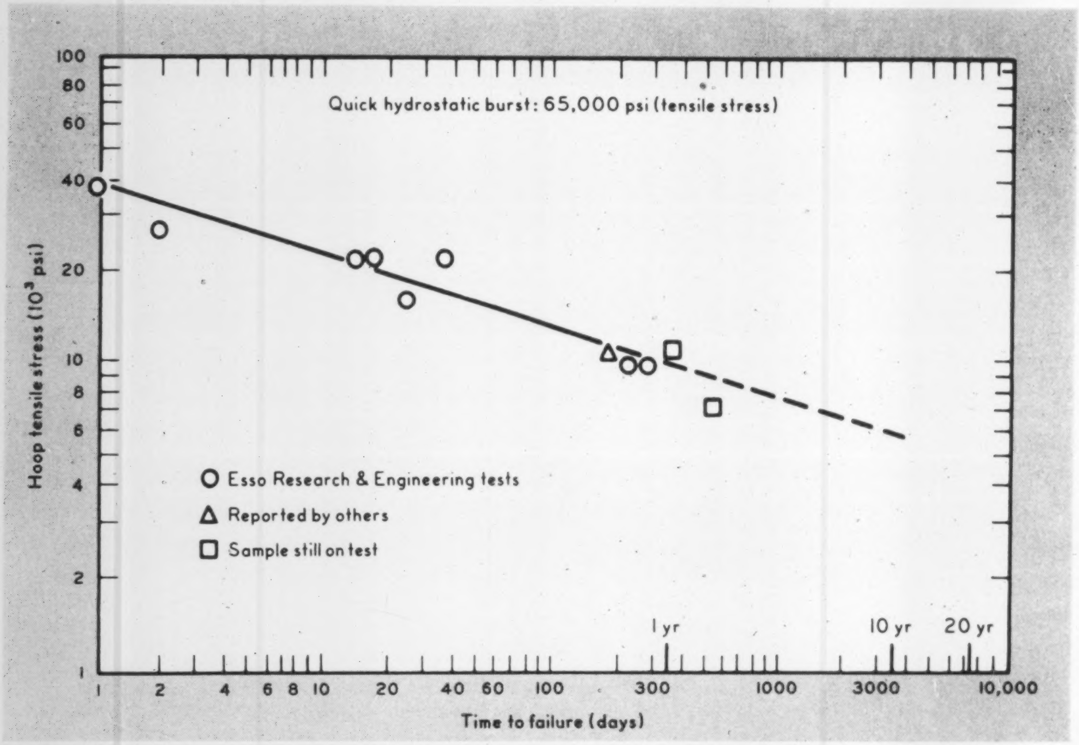
[1] Numbers designate References at end of the article.



2 TYPICAL STRESS RUPTURE CURVE for sustained pressure test of plastic pipe is plotted on loglog coordinates, with each point representing one or more test values. Such a test is most meaningful evaluation of true strength

the elastic limit of glass is the same as its ultimate strength; in other words, it possesses true elasticity with no yield. At rupture, elongation is about 3-½ percent.

Coefficient of thermal conductivity

The low capacity of glass to transfer heat is of course well known. The coefficient of thermal conductivity of glass is about 0.06 Btu per sq ft, per F, per ft.

Specific gravity

Glass is generally considered a lighter weight material with a specific gravity of 2.55.

Plastic Pipe Structure, Manufacture, and Properties

In general, glass-reinforced pipe is composed of two or three materials — glass fibers, plastic matrix, and an inner liner. The glass fibers which comprise about 60 to 80 percent of the pipe material are used as a structural cage, and carry the major part of the load. Damage to these fibers can cause serious loss of strength. Most pipes have an inner liner of either PVC or epoxy.

It should be noted that before the glass fibers can be used as reinforcement, a pretreatment is required. During the manufacture of the fiber a sizing agent and lubricating agent are added to the glass. This serves to keep the fibers together while minimizing the effects of the glass abrading upon itself. These particular agents are usually either removed before application or are designed to dissolve in the particular resin being used.

In addition, a coupling agent is also applied to the glass. This is designed to provide a chemical link between the glass and the resin. This effect, while generally accepted by most, must yet be conclusively proved. Some recent work, however, very strongly substantiates this case[7].

Others feel, however, that the bond between the glass and resin is largely a mechanical one, being mainly derived from the friction between the two materials. The friction forces are derived from the compressive stresses set up due to the differential shrinkage incurred when the two materials cool below the reaction temperatures.

Use Two Fabrication Methods

Each of the several manufacturers of glass-reinforced plastic pipe uses a different method of fabrication. They roughly fall into two types — external mandrel wrapping and an internal mandrel casting[8].

The external mandrel wrap pipe is made by winding resin-impregnated glass fibers around a polished mandrel and subsequently curing with heat. In the internal-mandrel process, the glass and resin are preplaced inside a mandrel and cast by use of centrifugal force and heat.

In both cases, the glass fibers can be oriented in any direction to provide maximum strength in the direction of maximum load. Fig. 1 shows a cutaway of a typical externally wound pipe, although for any particular manufacturer minor differences are present; some have no outer cover or inner liner, and glass distribution and orientation may differ.

Lack Standard Schedules

There are no standard schedules in glass-reinforced plastic pipe as there are for steel pipe, although the trend is toward standardization on iron pipe OD sizes. The plastics are rated by each manufacturer for his particular products. Small size, up to 2 in. diameter, pipe is currently available that will operate to 1500 psi. Temperature ranges are from −50 F to 300 F.

Corrosion Resistance Chief Advantage

The outstanding advantage of plastic pipe is its corrosion resistance; it is immune to the usual corrosion mechanism of electro-chemical attack. There is, however, the possibility of chemical attack on the plastics resulting in contamination.

In most cases, though, such chemical attack also results in the deterioration of the pipe and thus would represent a misapplication.

Chemical attack on the plastic material in the pipe is usually of the "go or no-go" type. Either the attack is suffered rapidly, or the plastic is completely corrosion resistant[9].

On the other hand, attack on the glass reinforcing or at the glass-resin interface is a more gradual type of degradation. Time is usually required for the reagent to reach the glass and then attack a sufficient amount of glass to cause failure. One of the most common materials which attacks glass in this manner is water.

Table 2 lists only a few of the demonstrated uses of glass-reinforced plastic pipe showing some of the corrosive fluids that may be transported. This list is only meant to give an indication of the material's chemical resistance and does not necessarily limit the pipe to these conditions; many other corrosive services are possible.

Plastic Is Light Weight

The weight of glass-reinforced pipe is about ¼ to 1/5 that of steel and about 2/3 that of aluminum. This light weight facilitates handling, decreases shipping costs and can result in a faster installation. These advantages become markedly apparent in larger sizes; for instance, 6 or 8 in. plastic pipe can be readily handled by one or two men.

Smooth Surface Aids Flow

The interior surface of the glass-reinforced plastic pipe is generally smoother than steel, perhaps approaching that of glass. The Williams and Hazen flow coefficient is in the range of 145 to 150, whereas steel is about 130. This will yield greater flow through plastic than through steel pipe under the same conditions. Futhermore, the coefficient tends to decrease with time for steel (to about 90) as corrosion occurs, whereas with plastic it remains relatively constant.

Fouling Danger Decreased

In handling highly paraffinic crudes, wax deposition along metallic pipe walls can be a serious problem. In some oil fields, even though oversized pipe is used, the lines must be cleaned as often as every other day.

By using plastic pipe, the rate of paraffin deposition is radically reduced. In most cases, there is no

TABLE 2 — DEMONSTRATED USES of glass reinforced plastic pipe. This is only partial list of corrosive fluids which may be transported, is not meant to limit pipe to these conditions. Nor are data necessarily applicable to all types of glass reinforced plastic pipe

Fluid transported	Temperature, F	Pressure, psi
Hydrochloric acid, concentrated	60 to 260	0 to 500
Hydrofluoric acid, 10 to 30 percent*	100 to 300	0 to 85
Phosphoric acid, 40 to 79 percent	200 to 300	50 to 200
Sulfuric acid, 60 percent	260	30 to 300
Sulfuric acid, 10 to 50 percent	100 to 290	0 to 250
Nitric acid, 5 percent	180	100
Chlorine, dry	90 to 120	35 to 75
Brine	40 to 275	0 to 1350
Benzene	80 to 120	150 to 500
Xylene	60 to 200	15 to 700

*Percent of concentration

deposit. This is probably due to the smoothness of the pipe, its low thermal conductivity, and its non-compatibility with the wax.

Recent tests at the University of Texas have demonstrated reinforced plastic pipe's relative superiority in this respect and also indicate some advantage over thermoplastic pipe[10].

The low heat-transfer characteristics of plastics are well known. The military is using plastics where skin temperatures are in the thousands of degrees while the interior is relatively cool[11]. Where heated liquids are being transporated, the advantage of having a low thermal coefficient in the pipe material is readily apparent.

Pipe Strength Varies Widely

Static bursts on 2 in. diameter pipe have shown ultimates of up to 8000 psi internal pressure or 70,000 to 80,000 psi tensile strength. However, this is not the complete story.

If the 8000 psi pipe were held at some lower pressure, say 4000 psi, failure might occur in a very short period of time. The long-term strength of the pipe is quite dependent upon the time, pressure, temperature, and environment.

The only reliable method presently available to predict safe operating pressures is to test under long-term conditions. It is doubtful that any universal correlation for determining long-term properties from short-term tests will be available in the near future; much still must be learned of the mechanisms involved.

How Plastic Pipe Can Be Tested

Since there are no standard tests available for glass-reinforced plastic pipe, appropriate test methods have had to be established. There are many types of tests currently in use. These include the static or quick hydrostatic burst, pulsating internal pressure (dynamic fatigue), edgewise porosity of the pipe wall, and others.

Perhaps the most meaningful test is a sustained pressure (static fatigue or stress-rupture) test, since it is the laboratory test that most nearly approximates field conditions.

In this test, the pipes are submerged in a water bath at, say, 150 F. and hydrostatic pressure is applied and maintained. The time to failure is recorded. The temperature selection is arbitrary and serves to limit the scope of the test. For a more complete performance picture, the entire temperature range should be covered.

Fresh water is used since this readily attacks the glass-fiber bond. As a matter of fact, distilled water is probably one of the most "corrosive" fluids the pipe could carry. The water will not only attack the bond, but will actually dissolve glass. Since the surface area of the fiber is so great compared to its volume, the fiber is readily destroyed.

On the other hand, salt water has less effect on the pipe[12].

When the results are plotted as a stress-rupture curve on the appropriate co-ordinates (loglog appears most suitable), the values produce a straight line.

Fig. 2 shows a typical stress-rupture curve. Each point represents one or more test values. As can be seen, although the pipe will originally fail at a hoop tensile stress of 65,000 psi under the conditions tested, a 5:1 factor of safety is inadequate. A factor of safety in the range of 10:1 to 20:1 is called for (depending on field conditions and length of service required).

Use Data With Care

One, perhaps obvious, note of caution should be mentioned. Since data of this type are obtained under a fixed set of laboratory conditions, judicious care should be exercised when extrapolating to design stresses.

In addition to reflecting no factor of safety, external stresses produced by bending, over-burden, water hammer, local impacts, thermal changes, and others are not accounted for in the results of this test. Since these stresses are additive in most cases, the operating stresses must be adjusted to account for them. ‡

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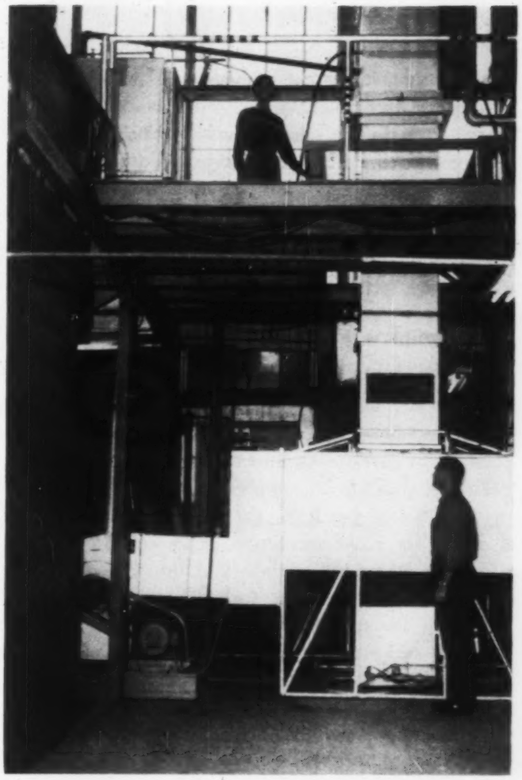
Engineers combine test results and

new evaluation method for

An Economic Analysis of Cost For Redwood Cooling Tower Packings

- The purchase of large equipment items for air conditioning installations represents a problem that must be solved on a two-fold basis — in view of both initial costs and subsequent expected operating costs. In addition, say the authors, it is unrealistic to consider the cost of any part of the equipment, such as cooling tower packing, on an individual basis. Only the use of cost figures which are directly related to all cost variables that will be encountered in the entire installation will give a true picture of the expense of owning and using the part being studied. Here is a formula to be used in determining the true evaluated cost of redwood cooling tower packing of various shapes, together with the results of experiments performed at the Texas Engineering Experiment Station, as those results are applied to the suggested cost determining method.



1 TEST INSTALLATION at Texas Engineering Experiment Station for evaluation of redwood cooling tower packings. Schematic of test arrangement is shown in Fig. 3

Redwood cooling tower packings, continued

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RESEARCH AND DEVELOPMENT activities are usually performed as a result of economic pressure. While there are exceptions to this rule—work dictated by military necessity or certain types of fundamental or basic research performed purely for academic edification—in general, a product will be considered truly "improved," or a work procedure an "improvement," only if the changes can be justified economically.

The example with which we will deal here is that of redwood cooling tower packing. Packing having higher heat transfer or lower pressure drop characteristics may or may not be an "improvement" when considered in the light of the many economic variables which have a direct effect on its real cost to the owner. Perhaps the initial cost is too high; or the useful life of the packing may be so short that replacement costs would prove excessive. Or, the operating costs imposed by its use might be so high that the entire installation is uneconomical.

In the past, it has not been unusual for equipment to be purchased solely on an initial cost basis. This is true even in the case of such expensive items as cooling towers. Perhaps such a procedure is justified when the installation has an extremely short life expectancy. In general though, low initial cost equipment may very well prove to be more expensive on a true, or real cost, basis.

Need Means to Find True Cost

Some method of determining *evaluated* cost must be obtained; whether we are dealing with long or short term amortization. Otherwise, the real logic of a particular investment must escape us.

The proposition is simple: For any one part of an installation (such as the packing in a cooling tower), only a determination of its cost in relation to all the other cost variables of the whole installation (the entire cooling tower), will give a true picture of the cost of owning and using the part.

The description accompanying this article shows how we have applied this notion to tests conducted at the Texas Engineering Experiment Station on redwood cooling tower packings of various shapes, described in Table 1.

The results of these tests, in Table 2, show that the rectangular packings with slats on edge produce the best performance factors (called Ka/L) and the lowest pressure drop (q). Rectangular packing with the slats placed flatwise produced the opposite, or poorest results. Based on these individual results only, the former arrangement obviously is the best packing.

Evaluation May Be in Error

But the conclusion could be in error, because the variables in the entire installation must be considered. Packing cost, tower installation, the expected life of the whole tower, and power costs were not considered. In relation to these factors, the packing that seems "best" may not be so.

The cost analysis procedure suggested here is based on the total yearly cost per sq ft of tower ground area for air conditioning specifications. In using the procedure, the following conditions were assumed constant:

Hot water temperature—95 F
Cold water temperature—85 F
Wet bulb temperature—78 F

Both water flow rate (L) and air flow rate (G) equal 1500 lb per hr per sq ft of tower ground area; and $L/G=1$

The ratio of (Overall energy conductance) X (Overall average wetted area) X (Active tower volume in cu ft) divided by the water flow rate ($L=$ 1500 lb) equals 1.09; the factor required for a 10 F cooling range, a 7 F approach, 78 F wet bulb temperature and equality of water and air flow rates.

In addition, the life expectancy of the tower was assumed to be 10 yrs, no salvage, and the prevailing money interest rate to be six percent.

Consider Tower, Packing Separately

We further assumed that the cooling tower could be considered in two parts: a) a minimum tower structure, including minimum mechanical equipment and air entrance and exit zones, but no packing, and b) a section of tower shell containing the height of packing required for the specific cooling job we would require.

The last constant which we applied to the procedure was a "capital recovery factor," (R), in order to put the initial cost, which must be invested immediately, on a comparative basis with the yearly operating cost, on which payment is deferred. This

2 SLAT ARRANGEMENT for packing slats. Slat shapes identified by number to left correspond to those in left hand column of Table 1 immediately below

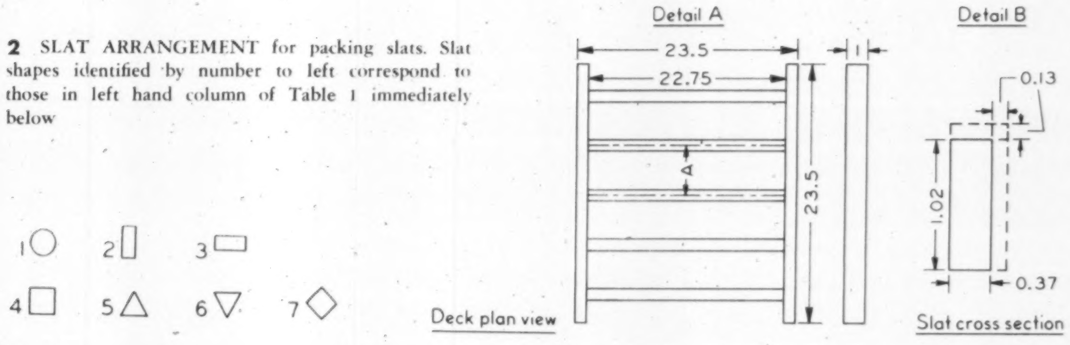

TABLE 1 — VARIOUS SHAPES of packings tested, identified by number in Fig. 2, above, resulted in test dimensions within cooling tower sections as shown here

Type of Packing	No. of Slats per deck	Horizontal Spacing, Dimension A*, in.	Slat Cross Section, In. Width	Slat Cross Section, In. Height	Projected Area,** Sq In. per deck	Rough Volume,*** cu in. per deck	Bd ft per deck
1	12	1.82	0.61 (diameter)		184	177.7	1.233
2	21	1.13	0.37	1.02	195	308**	2.140
3	8	3.02	1.02	0.37	204	111.6	0.775
4	13	1.85	0.60	0.60	195	176.0	1.223
5	13	2.20	0.60	0.30	195	69.7	0.484
6	13	2.20	0.60	0.30	195	69.7	0.484
7	10	2.44	0.85	0.85	211	124.3	0.862

* See Detail A. Vertical spacing, 6 inch centers between decks.
** Includes 18 sq. in. for side members, see Detail A.
*** Includes ⅛ inch saw Kerf, see Detail B.

factor will vary widely depending upon such tangible things as government regulations and company policy on equipment write-off, plus prevailing interest rates.

Equation Should Yield True Costs

If we can manage to establish an equation which considers all the variables for all parts of the cooling tower installation, we can then proceed to find the true evaluated cost of any one part of the system, in this case the packing, merely by reducing the equation to the point where the only remaining unknowns are those which have to do directly with the part in question— the packing. Then the results of our research experiments, which establish the only remaining quantities needed, will yield what we are seeking — the true cost of installing and using the part of the system under test; again, the packing.

Let us now proceed with the suggested equation which will provide this true analysis. Each of the factors are assigned a letter designator which stands for an economic variable. These can be divided into two parts: those which are connected with the yearly operating costs, and those which are connected with initial cost investment.

We will divide them first and explain their meaning hereafter.

Initial Cost Factors

Pertaining to the tower shell .... A plus BZ
Pertaining to the packing .... pZ
Pertaining to pump and piping .. $(A'$ plus $C'Z)L$
Pertaining to fan and motor assembly ......
.... $(A''$ plus $CqZ)G^3$

Yearly Operating Cost Factors

Pertaining to pump operation ... $(D$ plus $EZ)PL$
Pertaining to fan operation .. $(F$ plus $HqZ)PG^3$
Pertaining to maintenance and repair I

The equation established using these factors will

TABLE 2 — TEST RESULTS, as listed below, show that rectangular slats placed on edge (identified by No. 2) gave lowest value of N, or cost units per yr per sq ft for specified operating conditions

Type of Packing Slats*	Projected Area, sq in. per deck	Constant in equation for Ka/L*** at L/G = 1.0 Measured	Constant in equation for Ka/L*** at L/G = 1.0 Adjusted	"q", Pressure Drop in. H_2O at G = 1500 lb/hr/sq ft Measured	"q", Pressure Drop in. H_2O at G = 1500 lb/hr/sq ft Adjusted	"p", cost units per cu ft of packed volume****	"Z", required packing height, ft*****	"N" cost units per year per sq ft for specified operating conditions
2	195**	0.117	0.117	0.012	0.012	0.427	7.1	8.03
6	195	0.100	0.100	0.014	0.014	0.097	8.3	8.18
7	211	0.098	0.091	0.014	0.013	0.173	8.8	8.41
1	184	0.089	0.094	0.012	0.013	0.247	9.1	8.41
5	195	0.104	0.104	0.021	0.021	0.097	8.0	8.60
4	195	0.098	0.098	0.018	0.018	0.245	8.5	8.71
3	204	0.084	0.080	0.024	0.023	0.155	10.4	9.69

* Refer to Table 1 for shape of packing indicated.
** Projected Area assumed as a standard.
*** $Ka/L = C\,(L/G)^{-n}$, or the units of KaV/L per ft. of packed height.
**** Based on $400 per 1000 Bd-ft.
***** KaV/L = 0.26 at zero packing height.

Redwood cooling tower packings

yield a total *yearly* evaluated cost called "N", for each sq ft of tower area. It should be noted that only a few of these factors can be assigned numerical equivalents which will hold true for all cooling tower specifications regardless of operating conditions, ground areas, etc. The majority must be obtained from the actual conditions which exist for any one tower. We have, however, noted certain average values for these factors, which we believe to be reasonably constant. These are given to the right of the explanations which follow.

Here is the equation:

$$N = [(A + BZ) + pZ + (A' + C'Z)\,L + (A'' + CqZ)\,G^3]R + (D + EZ)\,PL + (F + HqZ)\,PG^3 + I$$

Note that with the exception of the factor "R", the "capital recovery factor," the various parts of the equation appear as they were given in the initial vs operating cost breakdown.

Remember that the answer we seek is yearly operating cost *per sq ft of ground area* of the tower in question.

Table Gives Factor Definitions

Table 3 gives the factor definitions in the order in which they appear; followed by our "average" equivalents.

If we now substitute our average figures, above, for the letter designators in the equation, then proceed with the normal cancellation process, the following is derived:

$$N = 5.88 + (0.1376 + 0.1359p + 9.04q)\ Z$$

We have thus obtained an equation where the only unknown quantities on the right hand side are those directly related to that part of the installation in question — the cooling tower packings.

Having conducted the tests as described in the accompanying box, we can now substitute numerical quantities for these remaining factors, q, p, and Z for each of the packings considered. In each case, the resultant value of N, the evaluated yearly operating cost, will change.

Substituting from Table 2, we find that the rectangular slats placed on edge yield the lowest value of N, and rectangular slats placed flatwise have the highest value of N, while the other shapes fall between these extremes.

These results, using the total cost evaluating procedure, show that the rectangular slats, on edge, are in fact the most economical for the conditions imposed. Now, however, we have satisfied the requirement for finding the packing which will prove most economical as actually installed and used, and not as an unrealistic separate entity.

Different economic conditions and different applications would result in different values of N, and might well prove that some other shape would be a better investment.

It only remains to comment briefly on some of the steps in the application of this formula.

The values $L = G = 1500$ lb per hr per sq ft, and $L/G = 1.0$ were assumed as a convenience in calculations but are reasonably close to economical practice. Previous cost analyses by the Station show that there is a value of G, or air velocity for each packing design, which will yield a minimum value for N, yearly operating cost. In most cases, the optimum value of G was lower than the values in common use for counter-flow towers; that is, the air flow rates commonly used were greater than the optimum flow rate. This points up the fact that designs are commonly based on initial costs rather than on the evaluated costs which we recommend, which consider power consumption and other known factors of operation during the expected life of the tower.

Certain items in the equation, such as C and H and others, are average values to be determined on the basis of existing installations and past experience. Item C, the cost of the fan and motor assembly per unit area, would not be constant if the same size motor and fan were used for more or less area units; that is for a larger or smaller ground area tower. Nevertheless, average values were used for demonstration purposes.

Method Gives Real Measure of Utility

No general design procedure has been developed from the test results. The evaluation method presented here, however, furnishes a means of combining values of heat transfer and pressure drop from tests into a meaningful measure of the packing's utility.

For the description of how tests were conducted, turn to page 192

TABLE 3 — DEFINITIONS of various factors used in cost analysis equation are given below

A = Cost of Minimum Tower structure, without mechanical equipment.
cost/sq ft ground area .... (6.00)

A' = Cost of pump, motor, and piping for the minimum height tower.
(cost) (hr)/lb water .... (3.00×10^{-3})

A'' = Cost of fan and motor assembly for the minimum height tower.
[cost/sq ft ground area] [(hr) (sq ft ground area)/lb air]^3 .... (1.00×10^{-9})

B = Cost of each additional ft of tower shell above minimum tower.
cost/ (ft packed height) (sq ft ground area) .... (2.00×10^{-1})

C = Cost of fan and motor assembly for packed part of tower.
[cost/sq ft ground area] [(hr) (sq ft ground area)/lb air]^3[1/in. water} . (5.00×10^{-9})

C' = Cost of pump, motor, and piping per ft of packed height.
(cost) (hr)/(ft packed height) (lb water) .... (1.00×10^{-4})

D = Yearly power consumption for the pump for the minimum height tower.
(Kwh) (hr)/lb water .... (1.2×10^{-1})

E = Yearly power consumption for the pump per ft of packed height.
(Kwh) (hr)/(lb water) (ft packed height) .... (6.0×10^{-3})

F = Yearly power consumption for the fan motor for the minimum tower.
[Kwh/sq ft ground area] [(hr) (sq ft ground area)/lb air]^3 .... (5.0×10^{-8})

G = Air flow rate.
lb air/(hr) (sq ft ground area) .... (1.500×10^3)

H = Yearly power consumption for the fan motor for the packed part of the tower.
[Kwh/sq ft ground area] [(hr) (sq ft ground area)/lb air] [1/in. water] (2.0×10^{-7})

I = Yearly maintenance and repair cost.
cost/sq ft ground area .... (5.00×10^{-1})

L = Water flow rate.
lb water/(hr) (sq ft ground area) .... (1.500×10^3)

N = Total Evaluated annual cost.
cost/sq ft ground area

p = Packing cost per cu ft of packed volume.
cost/(sq ft ground area) (ft packed height)

P = Power cost per kilowatt hour.
cost/Kwh .... (1.00×10^{-2})

q = Pressure drop through packing, at $G = 1500$.
in. water/ft packed height

R = Capital recovery factor, based on recovery of the initial cost of the tower in 10 years, at 6 percent interest.
(Dimensionless) .... (1.359×10^{-1})

Z = Ft of packed height required for the cooling specifications.
(ft packed height)

1. Note that the actual value of factors, other than "p", "q", and "Z", are not critical since they are considered constant for all packings being compared. Items "Z" and "q" are dependent upon the heat transfer and pressure drop characteristics of the packings, while "p" is a calculated value based upon the amount of material per unit of packed volume.

2. "Hr" is used in the mass flow rate of water or air per unit of ground area in factors for both the initial and operating costs as lb/(hr) (sq ft). It is used in A', the cost of the pump for the minimum tower, as (cost) (hr)/lb water. — based on the *total* mass flow of water per unit of time. It is used in "D" as (Kwh) (hr)/lb water — based on the hours of tower operation and the total mass flow of water per unit of time.

3. In all cases, "cost" is used to emphasize that the values of the factors can vary, depending upon the conditions under which the packings are to be compared. "Cost" could be in dollars, or in cost per sq ft of ground area used. As noted in the text, the values to the right of this table are average or assumed values for comparing the packings tested.

4. In "A", "C", and "F" the initial and operating costs pertaining to the fans would increase not only as a linear function of the packed height, but would also be dependent upon the packing pressure drop and would be a cubic function of the mass flow rate of the air. This is based on the fan laws:

$$hp_2 = [(cfm_2)^3/cfm_1] [hp_1]$$

A new method of accurate cost analysis based on the results of these tests is explained beginning on page 187.

Tests of Redwood Cooling Tower Packings of Various Shapes

SEVERAL HUNDRED tests have been performed by the Texas Engineering Experiment Station on a variety of packing configurations, shapes, and materials, in an effort to develop rational packing design procedures.[1,2] These are the results of tests conducted on packings made from redwood slats having different geometric shapes.

High heat transfer rates are only beneficial if the pressure drops are not excessive. Therefore the evaluation of the various shapes was made in accordance with the method described in the accompanying article.

How Tests Were Arranged

The equipment consisted of a counter-flow, forced draft cooling tower (Figs. 1 and 3). The tower was constructed from 16 gage galvanized sheet metal formed into interchangeable sections; each 2 ft square in cross section and 3 ft in height. The sections were designed so that packing heights of 3, 6, or 9 ft could be accommodated. A flume-type gravity water distributor was used with the tower. Provisions were made for varying the water and air flow rates through wide ranges and for controlling the flow rates within approximately ± one percent. The temperature of the water entering the tower was controlled within ± 0.1 F of the desired temperature for most operating conditions.

Wet bulb temperature of the air entering the tower was controlled within ± 0.2 F of the desired temperature. The tower was operated at entering air temperatures above those of the ambient air, since no provision was made for temperature control below the ambient level.

Air entering the tower flowed through a duct equipped with steam humidifiers for control of the wet bulb temperature, then through an ASME nozzle for flow rate measurement, through the blower, and into a large plenum chamber. The air was then directed upward through the packed tower and exhausted out-of-doors.

Air pressure drop across the packed section of the tower was determined by direct measurement of the pressure differential between the large plenum chamber and a smaller plenum directly above the packed sections.

The circulating water flowed by gravity from a sump located in the bottom of the large plenum to a centrifugal pump, then through a steam-to-water heat exchanger.

The heated water passed through sharp-edged orifice plates, and was returned to the tower through the water distributor section. The orifice plates were calibrated in place prior to operation of the tower. A multiple-channel, recording, resistance bulb thermometer was used to indicate steady state conditions in the tower before data were taken. All temperature observations were made with calibrated, mercury-in-glass thermometers.

Test Procedures

Performance tests were conducted on 3, 6, and 9 ft packing heights on each of the redwood packings described in Table 1. The projected area per deck of packing for each of the geometric shapes tested was held essentially constant. Vertical spacing between decks was 6 in., center to center. Each deck was rotated 90 deg in the horizontal from the deck immediately below.

Air flow rate was maintained at a constant 1500 lb per hr per sq ft of tower ground area during all tests. Performance tests were conducted on each packing height with water flow rates of 750, 1500, and 2250 lb per hr per sq ft of tower area.

The wet bulb temperature of the inlet air was controlled at 80 F and inlet water temperature at 105 F.

Test values of KaV/L were calculated from data

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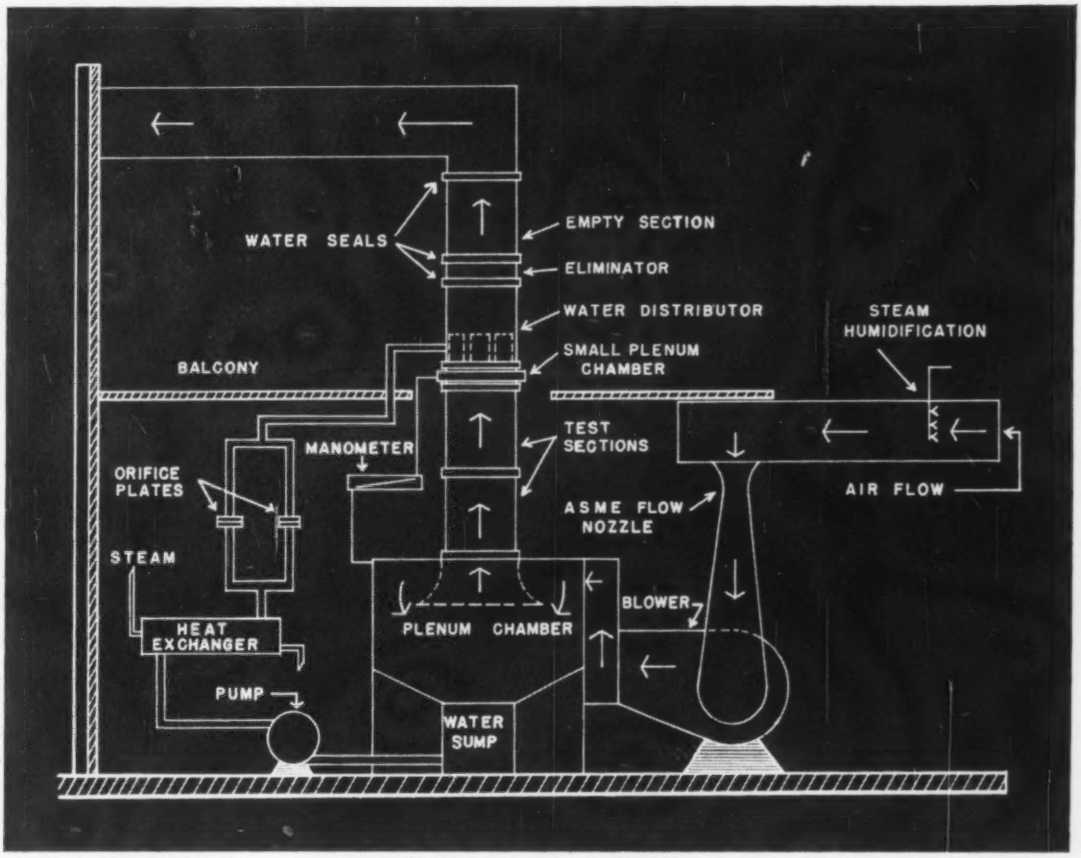
[1] *See references at end of article*



3 SCHEMATIC of test installation shows counter-flow, forced draft cooling tower, interchangeable test sections arranged so that packing heights of 3, 6, or 9 ft could be accommodated

using the common equation for counter-flow cooling towers:[3]

$$\frac{KaV}{L} = \int_{T_2}^{T_1} \frac{dT}{h'' - h_a}$$

where:

K = overall energy conductance, Btu per hr per sq ft overall average wetted area per Btu enthalpy difference per lb of dry air
a = overall average wetted area (surface of water drops plus wetted tower surface), sq ft per cu ft of active tower volume
V = active tower volume, cu ft
T_1 = temperature of inlet water, F
T_2 = temperature of outlet water, F
T = temperature of water in tower, F
h'' = enthalpy of saturated air-vapor mixture at water temperature, Btu per lb of dry air
h_a = enthalpy of air-vapor mixture, Btu per lb of dry air
G = air rate, lb of dry air per hr per sq ft of tower ground area
L = water rate, lb of water per hr per sq ft of tower ground area.

The test values of KaV/L were plotted as a function of the L/G ratio to establish the characteristic curves for each packing height tested. The values of KaV/L, at an L/G of 1.0, were plotted against the respective packing heights to determine the values of Ka/L, (KaV/L per ft of packing-height.)

The projected area of the rectangular packing with the slats oriented in the vertical was chosen as a standard. Measured values of Ka/L and pressure drop for the other packings were adjusted on the basis that the heat transfer and pressure drop characteristics, for small changes in the element cross section, could be adequately represented as a linear function of the projected area[1].

For example, the adjusted value of Ka/L calculated for the round packing slats by this method was:

$$\text{Adjusted Ka/L} = (195/184) \times (0.089) = 0.094$$

Table 2 gives the measured and adjusted values of Ka/L and pressure drop (q) for the various types of packing slats. The adjusted values of Ka/L were used to calculate the respective packing heights in the economic analysis described in the accompanying article. ∓

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[1] Study of Three Redwood Cooling Tower Packings, by Wesley W. Smith. Heating, Piping & Air Conditioning, July 1956

[2] Tests Compare Heat Transfer of Five Cooling Tower Packings, by Wesley W. Smith and Glenn F. Hallett. Heating, Piping & Air Conditioning, April, 1960

[3] Heating, Ventilating, Air Conditioning Guide. p. 583, 1959

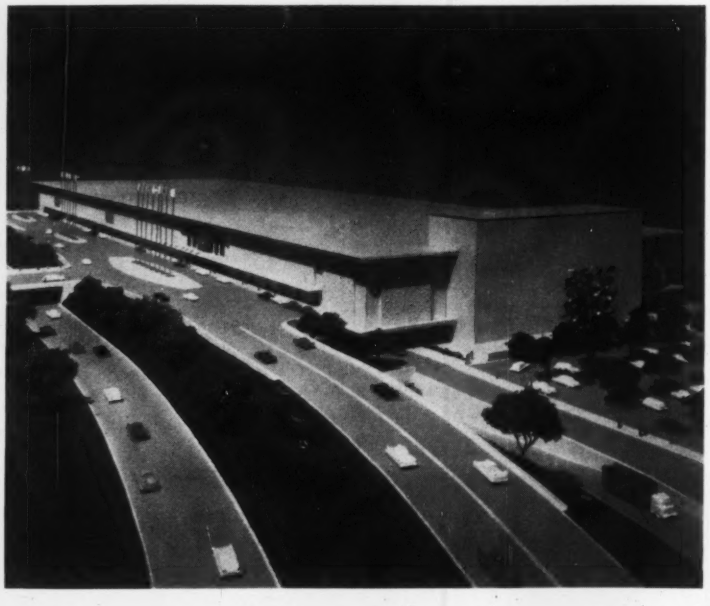
Coming next month . . .

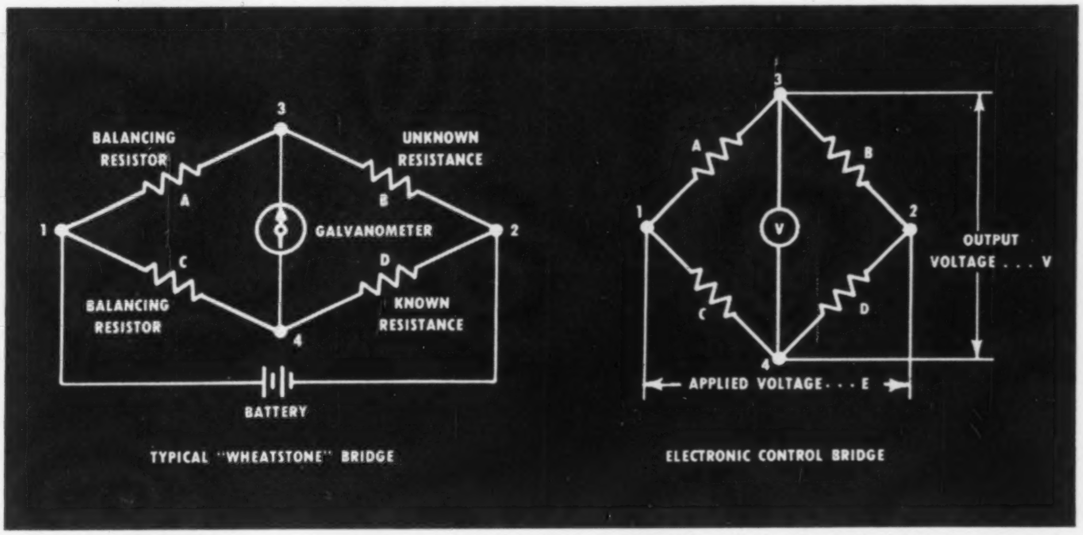
McCormick Place

THIS is Chicago's new Exposition Center, a 1 million sq ft convention and show facility fronting on Lake Michigan. Shown at left during the steel erection phase, and in artist's rendering below, the center is now open and in use. Within is 320,000 sq ft of exhibition space, a 5000 seat theater, huge lower meeting areas, banquet and service facilities to handle 30,000 people at one time.

NEXT MONTH, Lyman R. Flook, familiar to HPAC readers through his many articles, begins a comprehensive series on the heating and air conditioning systems which provide year 'round controlled environment for this huge structure.

MR. FLOOK is eminently qualified for the job, having served as coordinator of plans and specifications during the design and installation phases, for John Dolio & Associates, the consulting mechanical engineers. The series will include the "what and whys" of the overall design, specific information on air conditioning in the huge theater, and details of the many supplementary systems used throughout the building.





1 **BASIC CIRCUITRY** for electronic control is that of Wheatstone Bridge, left, where resistances in two "arms" can be varied to produce change in voltage across points 1 and 2 or 3 and 4. Electronic control combines phenomenon of changing resistance in electrical wire due to change in temperature, with bridge circuit; uses change in voltage to sense and transmit temperature changes

How to Use Electronic Controls

By JOHN SCHWARTZ
Automatic Controls Division
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• One of the ways in which electronic controls may be classified is by defining their action — in terms of proportional, floating, or two-position. Certain benefits accrue from the use of controls of each type, but only if they are employed for those jobs which require just that kind of control. Here is what you can expect from electronic sensing elements and related components — explained in relation to their functions as temperature control devices.

Electronic control systems are used today for a wide variety of applications in the heating, piping, and air conditioning field. Such systems employ components the operations of which are readily understood because of their familiar use in such everyday items as home radios and elementary electrical circuits.

The basic circuitry of the electronic control system is that of the Wheatstone bridge. This is a specific arrangement of resistances connected in a network (Fig. 1). When the two "arms" of the circuit, which encompass points 1 and 2, and 3 and 4, respectively, are supplied with equal voltage, the circuit is in balance and the galvanometer reading would be zero.

When, however, a change in resistance is applied to one of the arms, a change in voltage across points 1 and 2 or 3 and 4 results. This voltage change is measurable and may be amplified to perform useful work.

As applied to electronic control systems, such a circuit depends on the phenomenon of changing resistance in an electrical wire due to a change in temperature. In other words, the resistance of the wire is a function of its temperature.

Thus, the circuit can be used as a sensing element, from which the fluctuation in voltage caused by a change in temperature can be used indirectly to increase or decrease the output of heating and cooling equipment, change damper positions, etc.

A previous article (Dec. 1960) discussed the basic concepts of electronic control in some detail.

Examine Methods of Control

Electronic equipment is often, but not exclusively, used in porportional control applications. Therefore, it is well to briefly review the aspects of proportional control, in relation to other, or alternative, methods.

First, how can electronic controls be classified? One of several ways is to divide such devices by defining their *action*, in terms of proportional, floating, or two-position.

Two-position control provides full on or full off operation of the controlled equipment, with no intermediate positions. Many applications may be best served by the two-position function.

Floating controls position the controlled device (a motor operator which may in turn position immediate equipment controls) as required to maintain conditions at the control set point. Floating control permits the operator to stop at any position between full on and full off.

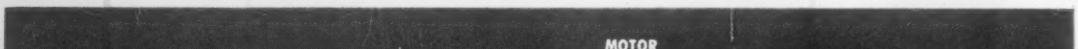
It should be noted that the use of floating-type control may be limited in some applications because of an inherent tendency to overshoot. This in turn may set up a condition of cycling, also called "hunting," in the controlled system. Overshooting and hunting are the result of time lags in the overall system, including room transmission lag, response time of the heating or cooling equipment, and the transmission lag through ducts or pipes.

Define Proportional Control

As indicated by the term, motor operators or actuators in a system using proportional control assume a position *proportional* to the change in, say, room conditions. "Room condition," used for convenience, is only one controlling factor. The same principle applies to any other controlled variable, such as water temperature, return air temperature, or discharge air temperature.

For a given increment of change in the variable, the controlled device will move to a definite and corresponding position which is proportioned to the increment of change. Cycling is avoided since the position reached by the motor operator or actuator is always the same for any given load on the heating or cooling system.

Proportional action is accomplished through feedback which links the actuator to the thermostat. As the actuator moves in response to a change in load,


SENSING BRIDGE
MOTOR POTENTIOMETER BRIDGE
OUTPUT OF MOTOR BRIDGE OPPOSES SENSING BRIDGE.
RESULTANT BRIDGE OUTPUT (AMPLIFIER INPUT)
AMP. INPUT EQUALS ALGEBRAIC SUM OF SENSING BRIDGE AND MOTOR BRIDGE OUTPUTS.
AMPLIFIER

2 ELECTRICAL FEEDBACK CIRCUIT for electronic controls uses slide wire type potentiometer incorporated in motor operator to oppose thermostat action, restore balance to system when operator reaches position proportional to change in heating load a signal builds up which is returned (fed back) to the thermostat. The effect of feedback on the thermostat is opposite to that of the temperature change caused by the load change. The thermostat, in effect, is told that the motor operator or actuator, and thus the air conditioning equipment itself, is "catching up" with the thermostat's demand. When the opposite effects of temperature change and feedback balance, movement of the motor operator is stopped, usually before it can reach the extreme open or closed position. Thus, the operator position which restores balance to the system is proportional to the change in the system load.

Principle Applies to Other Systems

In pneumatic control systems, feedback is developed by a spring in the actuator which opposes the pneumatic force on the diaphragm. If a change in temperature at the thermostat produces more pneumatic force, the spring is compressed until it reaches a position where spring force balances pneumatic force. The interplay of forces creates the feedback necessary for proportional control.

The change in temperature at the thermostat necessary to move the spring in a pneumatic actuator from its normal position to full compression is called the "proportional band" or "throttling range."

Or, throttling range can be defined as the number of degrees change in temperature at the sensing element, or thermostat, necessary to move the control motor or actuator through its entire stroke from full closed to full open. The shift in control point which occurs in all proportional control systems is called the "offset."

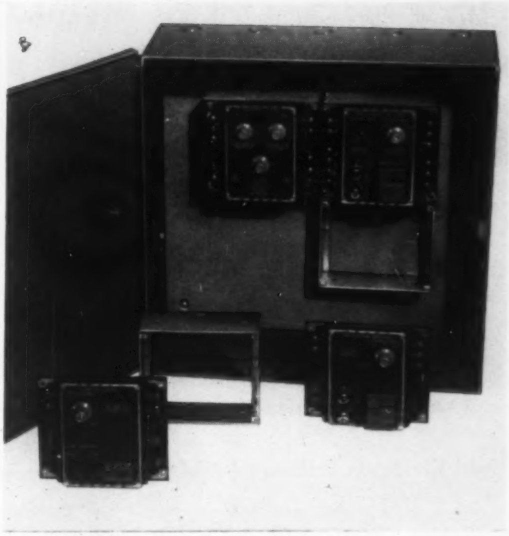
Throttling range and offset exist in electric and electronic control systems, and the definitions are the same as those developed in the description for pneumatic controls.

Potentiometer Develops Feedback

In electric and electronic control systems, feedback is developed by a slide wire type potentiometer incorporated in the motor operator. As the operator rotates, a voltage is produced which is proportional in magnitude to the operator position.

The voltage opposes the action of the thermostat or sensing element and restores balance to the system when the control motor reaches a position which is proportional to the change in heating load. Fig. 2 is a schematic diagram of an electrical feedback circuit for electronic controls.

Hydraulic temperature controls are available with mechanical, and more recently, electronic regulatory systems. In general, hydraulic force is opposed by a spring and diaphragm combination. The concept of feedback is similar to that used for pneumatic controls. Systems of control using hydraulic transmission are used where positive action is of vital importance, as in aircraft and missile equipment.



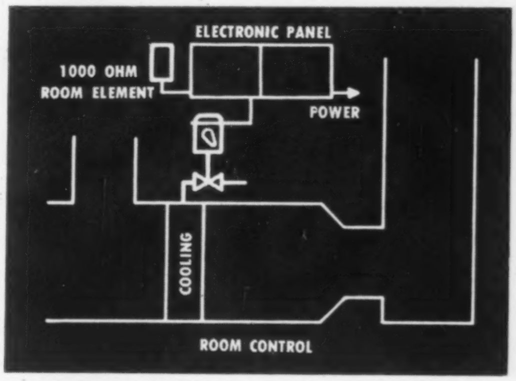
3 ELECTRONIC CIRCUIT control group like this would serve for temperature, humidity control

Apply Ideas to Temperature Control

Electronic circuits can be assembled at a central control point as in Fig. 3. Here, all control point and other adjustments are placed at one convenient location as are the measurement terminals for calibrating and checking out the job. There is virtually never any occasion for service personnel to enter an occupied room to adjust or work on a thermostat.

The group illustrated in Fig. 3 would service an application involving a temperature control and a humidity control system. Large installations might consist of several similar groupings in a repetitive pattern.

Control from one location can be obtained as in Fig. 4, which indicates a system using a room sensing



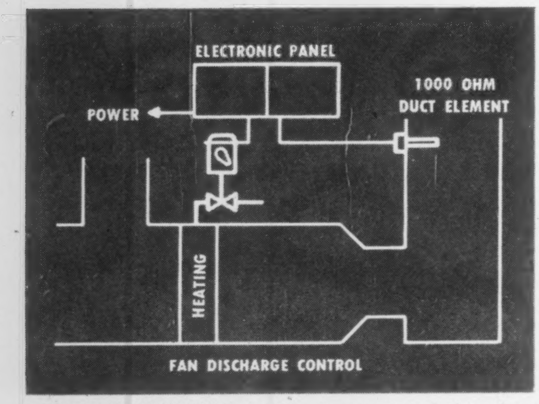
4 ROOM SENSING ELEMENT can be used for central system control installation element. For adaptability to various applications, room elements are of two types.

The non-adjustable kind is set for the desired temperature at the control panel, making the thermostat tamper proof. The setting can be changed at the panel.

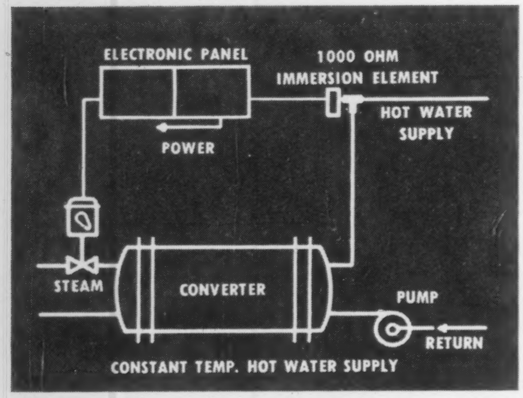
The adjustable variety permits manual changes in the set point at the thermostat. In Fig. 5, a duct sensing element controls fan discharge temperature. Fig. 6 shows an immersion sensing element which would detect a variance in supply water temperature. In all cases, the single element responds rapidly to small temperature variations.

Multi-Elements Improve Results

Many advantages are within reach by making simple additions of elements and electronic components to the basic system. The multi-element electronic systems created by "building block design" set new standards of control performance.



5 NON-ADJUSTABLE sensing element, installed in duct, is preset for tamper-proofing



6 ADJUSTABLE sensing element permits manual changes in set point at thermostat

One multi-element application is known as *averaging control.* The position of a motor operator is determined from the average of the temperature at two or more points (Fig. 7). The total resistance of all the averaging sensing elements connected to a temperature bridge in this manner is equal to the value of a standard single sensing element, since the several elements replace the single elements in the bridge circuit.

Assume the standard element resistance is 1000 ohms. The sensing elements need not be divided equally as long as they total 1000 ohms. By putting 800 ohms in zone A and 200 ohms in zone B, zone A would have 4/5 or 80 percent of the voice in the final temperature maintained, and zone B only 1/5 or 20 percent.

Demands from either zone can cause the motor operator to reposition. Because a single source of heat is controlled from two places, temperatures cannot be maintained exactly at the desired level at both points. There are applications which permit such a compromise. In those situations demanding more precise control, zoning of the heating equipment with appropriate controls is recommended.

Reset Control Also Possible

By dividing the sensing element, an electronic system can also become a ratio control which resets the control point in one variable according to the changes in a second variable. A system of this type wherein room temperature is reset from outdoor temperature is shown in Fig. 8.

In the illustration, the ratio is 9 to 1, because of the element division into 900 and 100 ohm sections. In operation this system raises the room control point 1 F for every 9 F drop in outdoor temperature. The reset ratio can be changed by substituting elements of different resistance values.

The foregoing system of ratio control is adequate in many applications and can be obtained with a minimum of equipment.

Can Use Auxiliary Bridge

Another method of obtaining reset control employs an auxiliary bridge circuit, as shown in Fig. 9. An application of an auxiliary bridge in a two-element system is shown in Fig. 10.

Equipment of this type provides a high degree of flexibility since the reset ratio can be changed at any time by means of a simple adjustment at the panel. Auxiliary bridge systems permit use of standard

1000 ohm elements throughout. There is no need to subdivide the resistances as there is in the single bridge averaging system.

Returning to Fig. 9, the main bridge is indicated in block form to simplify the diagram. When the movable arm of the ratio adjustment is located at *A*, the main bridge has the greatest authority and the auxiliary bridge the least. The opposite is true when the ratio arm is located at *B*, and when the arm is centered, each bridge has equal voice in the control action.

Different applications may require ratio settings from about 0.5:1 up to 20:1. From these ratios it is evident that the auxiliary sensing element may exercise varying degrees of authority from twice the authority of the main sensing element to 1/20 of that voice.

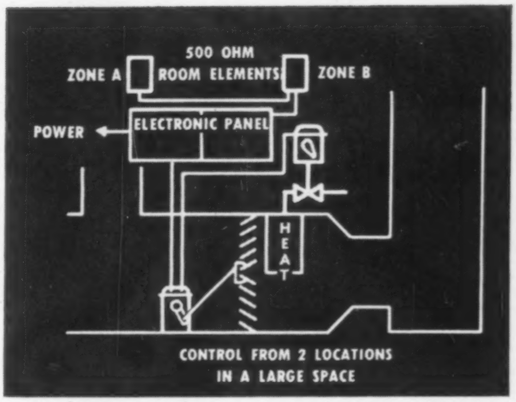
Compare Function to Pneumatics

The systems of ratio control described serve functions similar to dual bulb ratio controllers, or master-submaster controls in pneumatic systems. Electronic systems, of course, use resistance wire sensing elements rather than bimetal or bulb type thermostats. Reset or ratio control provides many advantages when properly applied.

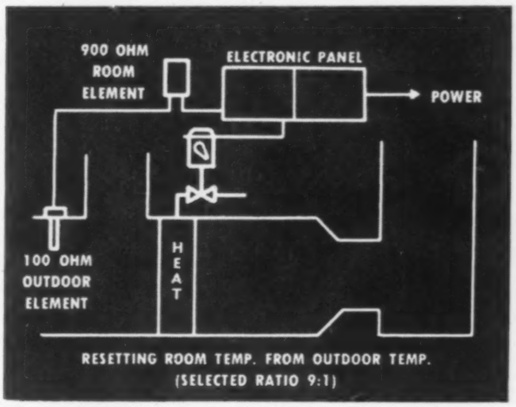
An example of a widely used application is resetting the supply water temperature in a hot water heating system from outdoor temperatures. This not only provides more economical operation, but makes it possible to maintain more nearly even temperatures within the building.

In some applications, a high throttling range must be set into the control system for stable operation. This is true regardless of the type of controls used. The high throttling range results in control point shift, or offset, which may be undesirable under some conditions. Proper use of ratio type control can eliminate the offset while retaining stability.

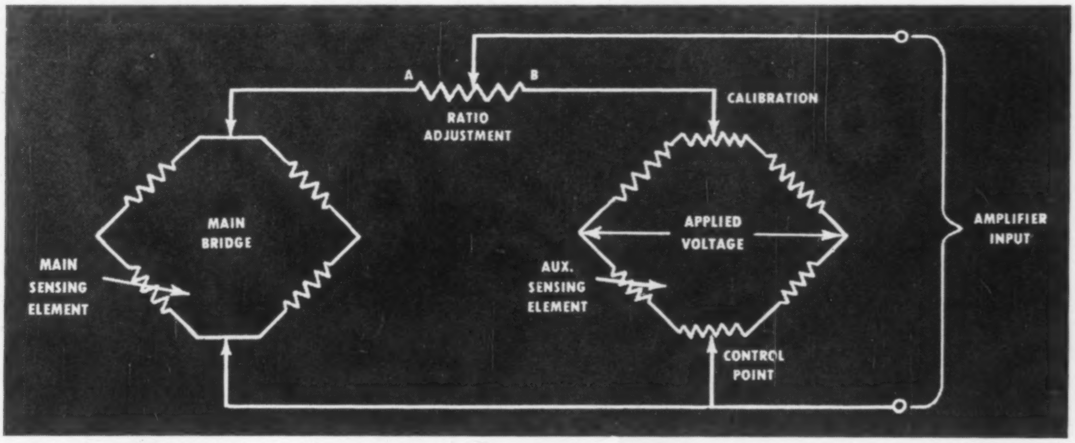
In systems of this kind, quick and easy adjustment of the ratio over a wide range is a distinct advantage. Equally convenient, of course, is the ease of throttling range adjustment provided.


500 OHM
ROOM ELEMENTS
ZONE A
ZONE B
POWER
ELECTRONIC PANEL
HEAT
CONTROL FROM 2 LOCATIONS
IN A LARGE SPACE

7 MOTOR OPERATOR position can be determined from average of temperature at two or more points, as here


900 OHM
ROOM
ELEMENT
ELECTRONIC PANEL
POWER
100 OHM
OUTDOOR
ELEMENT
HEAT
RESETTING ROOM TEMP. FROM OUTDOOR TEMP.
(SELECTED RATIO 9:1)

8 RESET SYSTEM uses outdoor element to help adjust room temperature


A
B
RATIO
ADJUSTMENT
CALIBRATION
MAIN
BRIDGE
MAIN
SENSING
ELEMENT
APPLIED
VOLTAGE
AUX.
SENSING
ELEMENT
CONTROL
POINT
AMPLIFIER
INPUT

9 AUXILIARY BRIDGE CIRCUIT installed in control system is means of obtaining reset control, provides flexibility since reset ratio can be changed at any time

A widely used application of ratio control, using standard electronic components, is room and discharge control. The main element is placed in the room and the auxiliary element in the discharge air stream (Fig. 11).

These two elements work hand in hand, and by sensing changes in heat input close to the source, temperature is accurately regulated while high stability is maintained.

For instance, assume that a change in conditions results in a call for heat. The heating system responds by increasing the heat input to the space. The change in heat input is sensed by the discharge element.

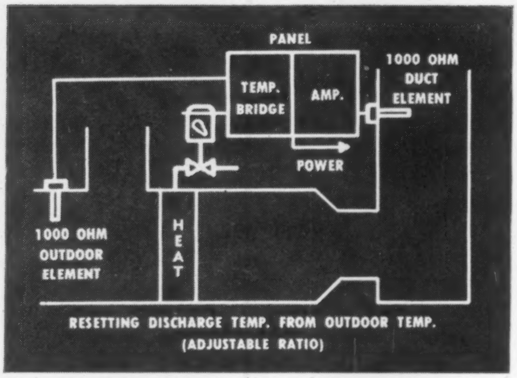
Now the system is partially restored to balance by the change in duct temperature, without waiting for the change in heat input to be transferred down the duct and mixed with room air for the room element to sense.

In such a case, an additional advantage results from the avoidance of uncontrolled variations in duct temperature. Such variations might result from changes in conditions which are unrelated to room requirements. They include fluctuations in steam pressure, changes in quantity of outdoor air due to variable wind velocity, changes in temperature of outdoor air admitted to the system, or unscheduled changes in supply water temperature.

Eliminate Temporary Drafts

Control of the discharge temperature can eliminate drafts from the above variations which are too short in duration to be sensed by the room element. Experience indicates that discomfort more often develops from rapid variations in discharge temperature than from poorly maintained space temperature.

Such a discharge element is particularly valuable in a constant temperature-constant humidity system. If mechanical cooling equipment operates to provide dehumidification, the discharge element will then supply the reheat immediately. Without the discharge element, the cooling would affect room temperature until corrective action could be initiated by the room sensing element.



10 APPLICATION of auxiliary bridge in two element system permits use of standard 1000 ohm elements throughout

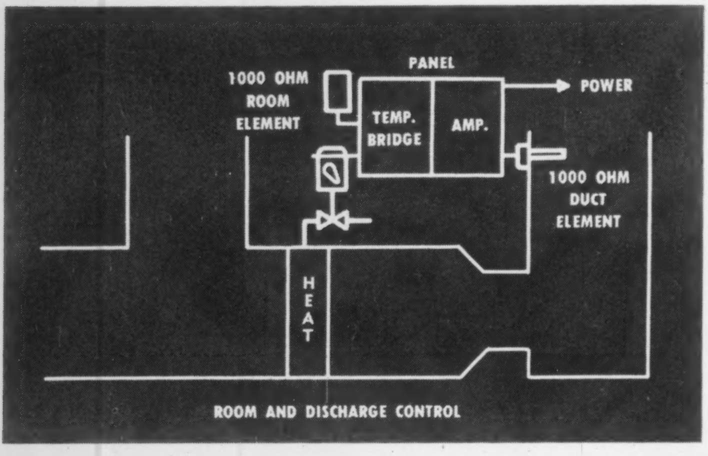
Method Permits Compensation

Fig. 12 illustrates a method of reset control which deals with several variables. As before, the main element is located in the room. An auxiliary discharge element provides the advantages previously described. Additional bridge circuits accommodate the two outdoor elements required for summer and winter compensation.

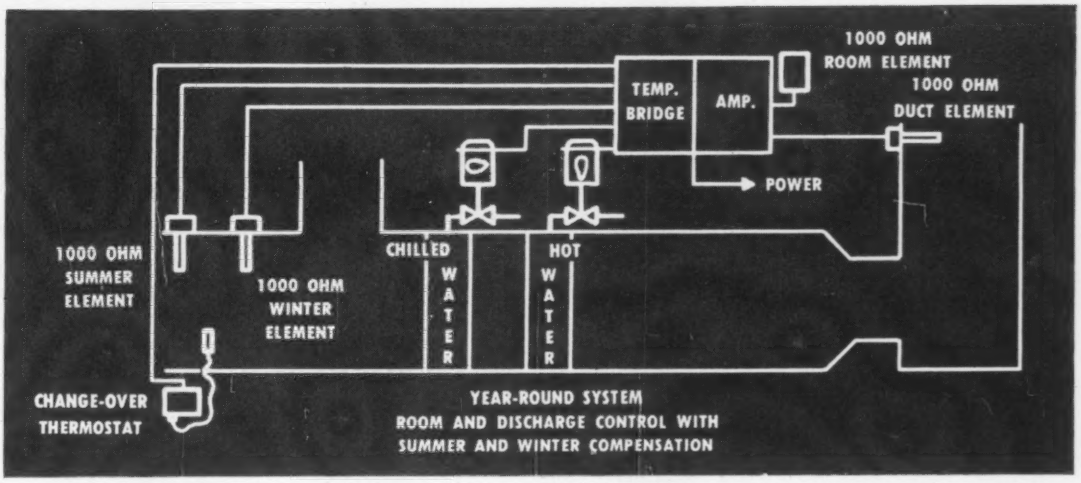
An outdoor element senses changes in exterior temperature and enables the heating system to counteract them before the effect is noticed inside the controlled space.

In addition, the outdoor element can be employed to raise the control point slightly as outdoor temperature drops.

This practice is used to maintain uniform effective temperature as indoor relative humidity decreases in cold weather, and to reduce or eliminate entirely



11 RATIO CONTROL, using standard electronic components, is obtained by placing main element in room to be controlled, auxiliary element in discharge air stream



12 RESET CONTROL METHOD which deals with several variables is illustrated here. System uses main room element, auxiliary discharge element, additional bridge circuits to accommodate summer and winter outdoor elements

the control point shift that may otherwise result from throttling range. During summer operation, the summer outdoor element is used to raise the control point of the room element as outdoor temperature rises. This is done to avoid the discomfort which may be felt by persons entering and leaving the conditioned space when extreme differences in temperature exist between the inside and outdoors.

If the cooling system is controlled in a two-position manner, such as starting and stopping a compressor on a direct expansion system, the discharge element would be removed from the circuit for summer operation. These changes in circuitry, as well as the complete system change-over, would be accomplished by the change-over thermostat that is shown in Fig. 12.

A subsequent article will deal with the process of combining electronic control components to accomplish the desired end effect on heating and cooling systems, and will also illustrate the wide variety of other applications, such as humidity control, hot water temperature regulation, and night setback provision, for which electronic sensing devices are eminently suitable. ‡

Predicts Rapid Growth for Apartment House Air Conditioning

CENTRAL AIR CONDITIONING systems for apartment buildings will become one of the industry's biggest markets in the next five years, according to Russell Gray, president of Carrier Air Conditioning Co.

Several factors are combining to expand the market, among them being the accelerated rate of new apartment construction and keener competition for tenants, Mr. Gray said.

One recent example of a centrally air conditioned apartment is the $5 million 11-story Sutton Terrace in Philadelphia. The system allows each tenant to regulate his own climate via a dial on the conditioned air outlets. Sutton Terrace opened last September with all 175 units rented.

At Wedgwood House in New York City, an absorption refrigeration machine which uses steam to produce warm or chilled water pipes these to under-window fan-coil units in each apartment.

A similar steam-powered absorption machine forms the nucleus of the central air conditioning system installed in the Stalder-Lido Apartments under construction in Denver, Colo. The machine is located on the roof of the 16-story structure, thus freeing the basement for additional parking and storage space.

Mr. Gray added that "it won't be long before apartment builders everywhere will look upon central air conditioning in the same way they now regard central heating." ‡

the law and your profits

JOHN F. MORRISSEY, author of this regular feature, is an attorney at law and has an extensive practical business and legal background. This series is based on actual cases. All names are, however, fictitious. It should, of course, be remembered that the law varies in different states.

Contractor May Incur Unusual Liability When Children Are Injured

CLEAR PROOF of negligence on the part of workmen or their employer must ordinarily be shown to sustain a claim for injuries against the employer. And where the person injured is trespassing on property upon which he is injured, he is generally precluded from a recovery of damages.

However, there is a legal doctrine known as "Attractive Nuisance" which creates a burden of responsibility to small children that is not often anticipated. If, for instance, a contractor leaves about equipment or machinery which is considered to be alluring or attractive to an immature child and the child is injured in connection with the equipment or machinery, the contractor may be held liable, even though the child was trespassing.

The A. Magnet Piping Company was engaged in the laying of a pipe line along Second St. upon which resided the Maine family. On the morning of August 11, at about 9 a.m., Magnet's workmen strung iron pipe along the street in front of Maine's residence.

There was a culvert on the driveway leading to the Maine house. In order not to block the driveway, two lengths of pipe were laid side by side near the culvert instead of end to end. The ground on which the two lengths of pipe were resting sloped down from a fence in front of the Maine house to the top of the pipe ditch at an angle of about 25 degrees.

On the afternoon of the same day, while one of the workmen was working near the culvert, one of the Maine children, a boy of five, went on the culvert and stood looking down at the man.

One workman stated to the child, "Get back — don't get up close."

The boy then left the culvert and climbed on the length of pipe nearest the ditch. The pipe rolled into the ditch with the boy on top of it and the second pipe followed behind, rolling on top of the child and causing severe injuries.

In the lawsuit that followed, there was conflicting evidence as to whether blocks had been placed at the pipes to keep them from rolling. Finally the jury rendered a judgment against Magnet for several thousands of dollars.

Magnet appealed the case to a higher court and stated that the verdict had been wrongfully based on the Doctrine of Attractive Nuisance. In order to apply such a doctrine, argued Magnet, it must involve open and dangerous devices alluring and attractive to small children. The pipe was not dangerous nor should it be considered unusually attractive to immature children. The doctrine can only apply, he contended, to such devices that are apt to entice a child into danger. Everything cannot be protected from the intrusion of children.

"The law in this State," said the higher court, "is that a child under the age of seven is incapable of guilt, in connection with a trespass, or contributary negligence. Children had been playing on and about the pipes during the day prior to the accident and Magnet's workmen knew of this fact. Whether the pipe was blocked, or, if it was blocked, whether it was properly blocked, under all of the circumstances, whether it was attractive to allure children into danger, whether the situation was such as to suggest to the defendant the probability of accident, and whether the defendant was negligent are questions of fact which the jury properly decided.

"The jury," continued the court, "found the Magnet Company guilty of negligence in the placing of its pipe along the street in the manner in which it was placed. Such negligence was the proximate cause of the injury. We cannot, therefore, disturb the judgment of the lower court."

It can be easily seen that the Doctrine of Attractive Nuisance can have a very wide application. The necessity for protecting children, particularly small ones, against anything that can cause their injury is apparent. ‡

Chart Compares Vapor Concentrations In Ambient, Exhaust Air

By CLYDE F. METZLER
Chief Engineer
National Technical and Scientific Co

THIS nomograph allows quick computation of the minimum differential between the average concentration of solvent vapor in the ambient air and the average concentration in the air which is exhausted from the area where the solvent is used.

A previous nomograph presented in the December, 1960 issue provided a means of easy determination of the air flow rate required to maintain a specified ventilation design concentration of industrial solvents when the molecular weight of the solvent is known.

Where this differential is less than 50 percent of the allowable ventilation design concentration, the proposed or existing exhaust system is adequate. Where the differential exceeds 50 percent of the ventilation design concentration, additional exhaust facilities may be necessary.

The following examples will clarify the use of the accompanying nomograph.

Example 1

A solvent evaporates at the rate of 0.005 pints per min. What is the minimum differential if the dilution rate is 80,000 cu ft of air per pint of solvent, when the ventilation design concentration is 50 ppm and the convection ventilation rate is 200 cfm?

Solution: Enter the chart on the left at the evaporation rate of 0.005 pints per min, and draw a straight line (1) through the dilution rate of 80,000 cu ft per pint of solvent, on the right. From the intersection with Pivot 1, draw a line (2) through the ventilation design concentration of 50 ppm on the left. From the intersection of this line with Pivot 2, draw a line (3) through the convection ventilation rate of 200 cfm on the right.

At the intersection with the differential scale, read the minimum differential, 100 ppm.

Example 2

An industrial solvent evaporates at the rate of 0.01 pints per min. What is the minimum differential if the dilution rate is 100,000 cu ft of air per pint of solvent, when the ventilation design concentration is 150 ppm and the convection ventilation rate is 400 cfm?

Solution: Enter the chart on the left at the evaporation rate of 0.01 pints per minute and draw a straight line through the dilution rate of 100,000 cu ft per pint on the right.

From the intersection with Pivot 1, draw a line through the ventilation design concentration of 150 ppm on the left. From the intersection of this line with Pivot 2, draw a line through the convection ventilation rate of 400 cfm on the right.

At the intersection with the differential scale, read the minimum differential, 375 ppm.

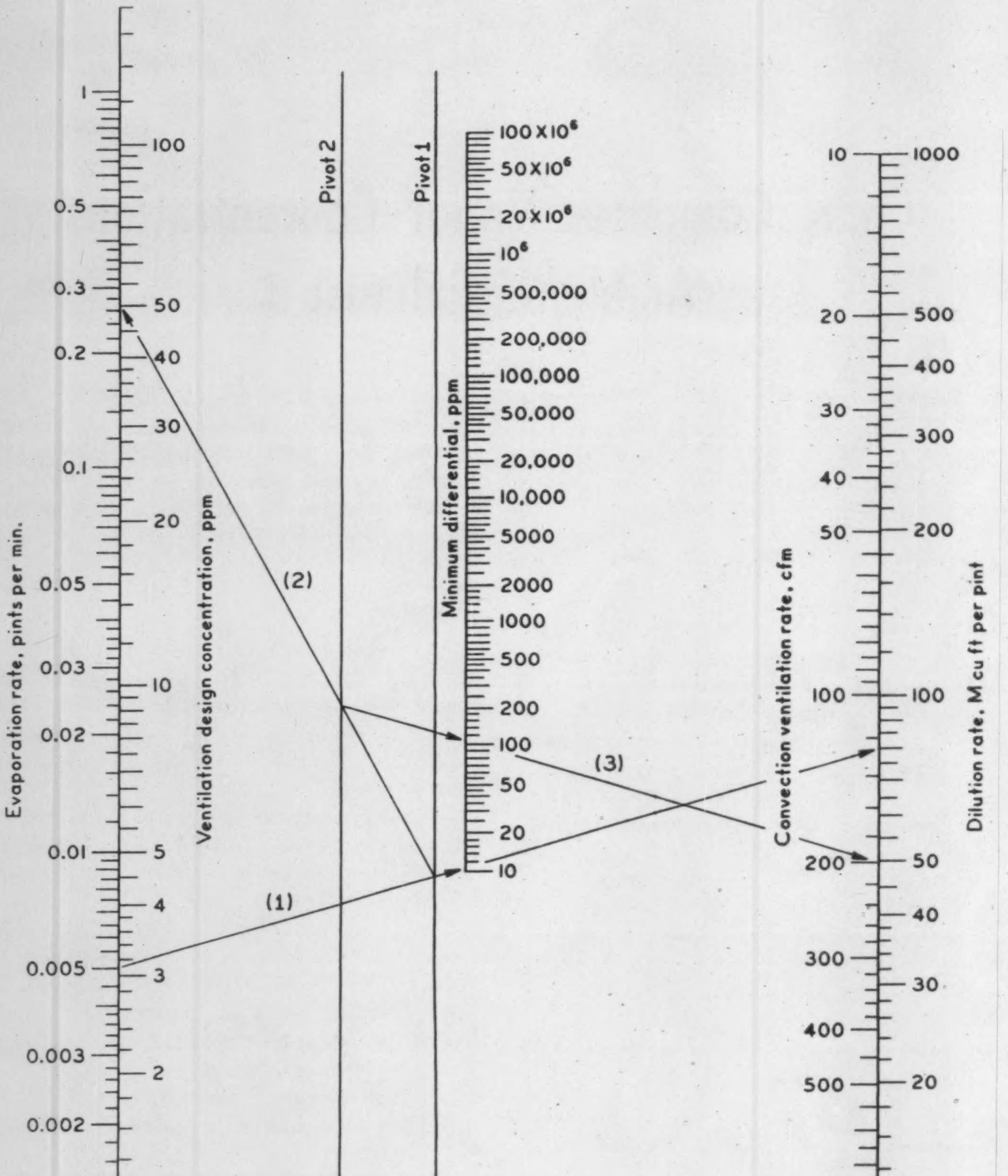
This chart is based on the equation

$$M = EDC/V$$

where

M = Minimum differential
E = Evaporation rate, pints per min
D = Dilution rate, cu ft per pint
C = Ventilation design concentration, ppm
V = Convection ventilation rate, cfm

This nomograph applies to the air flow through any type of hood, regardless of its configuration, and may be used for installations where ventilation is provided by means other than a hood. ⫩



NOMOGRAPH for use in industrial ventilation design where solvent vapor concentration must be controlled allows quick computation of the minimum differential obtained between average concentration of solvent vapor in ambient air and average concentration in exhaust air

SCENE OF THE International Heating & Air-Conditioning Exposition is Chicago's International Amphitheatre at 43rd and Halsted Sts. The Stock Yard Inn is at the left of this view

Preview of Chicago Show

THE 15TH INTERNATIONAL Heating & Air-Conditioning Exposition opens its doors at 12 noon, Monday, February 13, on more than 500 displays of equipment for heating, cooling, ventilation, moisture control, air purification, and refrigeration. According to its management, the show will comprise a greater amount of such equipment than has ever before been assembled at one place, and will include materials, components, and complete systems.

The exposition will be open daily from noon to 10 p.m. Monday through Thursday. On the same days, the American Society of Heating, Refrigerating and Air-Conditioning Engineers will hold a semi-annual meeting at the Conrad Hilton hotel in Chicago. Preceded by various committee meetings on Saturday and Sunday, the first and second technical sessions and a symposium are scheduled for Monday at 9:30 a.m., with forums that afternoon. The third technical session and symposiums on heating and on air conditioning are planned for Tuesday at 9:30 a.m., with forums at 2 p.m. On Wednesday, there will be a research and technical program plans conference and a symposium at 9:30 a.m., and forums again at 2 p.m. The fourth technical session, and a ventilation symposium, are scheduled for 9:30 Thursday.

Non-technical events include a "mixer" from 3 to 6 p.m. on Sunday, February 12, a welcome luncheon at 12:30 on Monday, a "get-together" party at 8:30 that evening, and a banquet at 7:30 p.m. on Tuesday (because February 15 is Ash Wednesday). Harry Gragg is chairman of the arrangements committee.

A complete listing of the exhibitors at the exposition, and previews of the displays, appear on the following pages, with diagrams showing the booths.

HOURS

Exposition open 12 noon to 10 p.m. daily, Monday through Thursday, February 13-16, at International Amphitheatre, 43rd and Halsted Sts., Chicago.

SPECIAL BUS SERVICE

Starts Monday, 10:30 a.m., with stops at Sherman hotel (Clark St.), Morrison (Clark St.), Palmer House (Monroe St.), Congress hotel (Michigan Ave.), Sheraton-Blackstone (Michigan Ave.), Conrad Hilton (Michigan Ave.). One way fare is 50c.

CITY BUS SERVICE

Mondays through Saturdays, 7 a.m. to 7 p.m., board southbound Halsted-Downtown bus (No. 42) on Clark St. (two blocks west of State St.) and ride direct to International Amphitheatre entrance. Return to Loop over same route. In Loop area, this service operates east in Polk St. from Clark to Dearborn Sts., north to Randolph St., west to Clark St., and south in Clark St.

ADMISSION

Exposition is under the management of E. K. Stevens, of the International Exposition Co., and is under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers. It is open by invitation and registration only, the general public not being admitted. ASHRAE members attending meeting are admitted on their society badges, exposition registration not being necessary.

EXPOSITION EXHIBITORS AND THEIR EXHIBITS

HERE ARE THE names of the exhibitors who are scheduled for the 15th International Heating & Air-Conditioning Exposition, per latest advice at press time from the exposition management.

Those listed with information on the products they will exhibit and the names of representatives who will be in attendance furnished these details direct to the publisher.

ACE ENGINEERING CO., 2850 W. Harrison St., Chicago 12, Ill. — Booth 936

J. W. Cowan, R. E. Hoffman, D. B. Barrett, A. F. Jelenc, A. Eckstein.

Rotary oil burners, forced draft oil/gas burners, control cabinets, control consoles.

ACKERMAN GAS BOILER CORP., S. Main St. & P. R. R., McDonald, Pa. — Booth N-134

Harold S. Ackerman, John R. Philip, Edward O. Nadolny, Nat Johnson.

"Ack-O-Matic" cast iron gas boilers for steam and hot water, capacities from 62,000 to 3,000,000 Btu per hr. Completely packaged and pre-wired cast iron gas boiler and zone control system will be featured.

ACME ENGINEERING & MFG. CORP., 2000 N. York St., Muskogee, Okla. — Booth 1133

Curt Buddrus, Ed Buddrus, Norman Augsburger, H. R. Bohanon, James Calhoun, Morris Caves.

High volume, low and moderate pressure, belt driven propeller fans; direct driven propeller fans for low and moderate pressures; tubeaxial belt driven fans; power roof ventilators, direct driven propeller type; standard and heavy duty wall shutters. Large size belt driven propeller fan, new power roof ventilators; new belt driven propeller fan, new heavy duty wall shutter will be featured.

ACME INDUSTRIES, INC., 600 N. Mechanic St., Jackson, Mich. — Booths 854, 864

K. A. Weatherwax, P. A. Weatherwax, W. M. Hassenplug, E. B. Dunphy, D. G. Merrill, H. R. Krueger, L. R. Smith, David Hannan, H. W. Smith, J. T. Maloney, R. L. Bishop, R. Jay Harris, P. Butterfield, W. J. Morris, J. F. Calvin, H. J. Rust, Frank Russell.

Packaged liquid chillers, self-contained air conditioners, cooling towers, evaporative condensers, air cooled condensers, air handlers, remote room conditioners, shell and tube coolers, water cooled condensers, heat exchangers, oil separators, liquid receivers, coils. Industry's largest hermetic packaged liquid chiller and self-contained air conditioner with exclusive sequential unloading system will be featured.

ACTUAL SPECIFYING ENGINEER, 1801 Prairie Ave., Chicago 16, Ill. — Booths N-414, N-416

Publication.

ADDISON PRODUCTS CO., Addison, Mich. — Booths 1110, 1114

V. C. Knight, H. L. Ruliffson, T. H. Smoot, W. W. Hull, R. E. Dyas, J. A. Prugh, W. C. Rehor.

Window air conditioners, 5 hp horizontal package air conditioners, 7½ and 10 hp air cooled condensing units, new 1200 cfm and 3000 cfm air handlers, dehumidifiers. Exhibit will feature initial showing of all new equipment, including introduction of commercial line. A casement window conditioner and large tonnage window or through-the-wall conditioner will be installed in a fabricated room wall.

AERO SUPPLY MFG. CO. INC. — see L. J. WING MFG. CO.

AEROQUIP CORP., 300 SouthEast Ave., Jackson, Mich. — Booth 120

Marvin Brandau, Robert Jordan, and several sales engineers.

"Freon 12" hose, "Freon 22" hose, "Freon" self-sealing couplings, "One-Shot" "Freon" coupling (if available).

AIR CONDITIONING EQUIPMENT CORP., 219 E. 44th, New York 17, N.Y. — Booth 1103

Kenneth S. Davidson, John B. Hewett, J. M. Errico, R. G. Lake, Ted Knapp, Ed Gifford, F. M. Spence, J. F. Mulley, H. Maybank.

"Pollux" all-mechanical Btu meter, "Pollux" Btu chart recorder, "Pollux" strip chart gallons recorder, flow meters, Btu meter for use with cooling tower, gas density recorder. New all-electrical Kth sweep balance Btu meter for use with flow meter or orifice plate meter will be featured.

AIR CONDITIONING, HEATING & REFRIGERATION NEWS, 450 W. Fort St., Detroit 26, Mich. — Booth 342

Publication.

AIR CONDITIONING, HEATING & VENTILATING, 93 Worth St., New York 13, N. Y. — Booth 751

Publication.

AIR CONTROL — see LEIGH INDUSTRIES INC.

AIR DEVICES INC., 185 Madison Ave., New York 16, N.Y. — Booth 1015

C. N. O'Day, G. J. Sweeney, H. K. Kunen, W. J. Fembleaux, P. G. Daves, J. C. O'Day, T. A. Hughes.

"Agitair" high velocity mixing boxes; perforated diffusers; square and rectangular diffusers; "Stripline" slot type diffusers; circular diffusers; registers, grilles and extruded aluminum grilles; pull-down and panel filters; exhausters.

AIR ENGINEERING, 450 W. Fort St., Detroit 26, Mich. — Booth 342

Publication.

AIR-HEET CORP., 4535 W. Washington Blvd., Chicago 24, Ill. — Booth 1020

James R. Scott, H. R. Coleman, H. O. Berg, G. E. Wrassman, Grant Sisson, Richard Peters.

Furnace type humidifiers, humidifiers for radiator heated homes, air purifiers.

AIR MOTION RESEARCH, Div. of MISSILE DYNAMICS CORP., 10890 Stanford Ave., Lynwood, Calif. — Booth N-247

O. M. Bell, Mowry W. Keith, Joseph Stenger, William Tennity, R. R. Waites, A. C. Bouey, William G. Mussun, Jr., Charles Colyer, W. A. Crowder.

MAC (mixed axial centrifugal) fan, featuring integral compactness, low installation cost, inherent constantly rising pressure curve eliminating possibility of pulsation, and non-overloading hp curve characteristic. Fan is especially designed for ventilating, air conditioning, commercial, industrial, and marine applications, furnished in five classes of construction for pressures through 16 in. static.

AIRFAN ENGINEERING CO., 7401 Telegraph Rd., Los Angeles 22, Calif. — Booths N-312, N-314

David Reznick, Saul Pressman.

Gas fired "Multizone" GMZ units utilizing gas fired furnaces for heating, DX coils for cooling, 12 sizes, 1-21 zones; forward and backward curved blowers; rotary and slinger air washers.

AIRGUIDE PLASTICS CORP., 20 S. E. Third Ave., Miami, Fla. — Booths 1046, 1048

Alan L. Radcliff, Charles H. Posner.

All nylon heating and cooling registers, grilles and ceiling diffusers. Registers offered in both multi-louver and opposed blade damper styles. Also unique modular design return air grilles with aluminum frames and nylon core.

AIRSERCO MFG. CO., 435 Melwood St., Pittsburgh 13, Pa. — Booth 1145

AIRTEMP DIV. — see CHRYSLER CORP.

AIRTEX CORP., 2900 N. Western Ave., Chicago 18, Ill. — Booth 217

Parker Thorne, Ray Nierzwicki, Dale King, Thomas R. Bergh.

Radiant-acoustical ceiling; "Arvin" electric ceiling panel.

AJAX BOILER & HEATER CO., 1519 W. 132nd St., Gardena, Calif. — Booths 1058, 1060

Lloyd E. Donahue, Dean Talley.

Water and steam boilers — gas fired, oil fired and combination gas-oil.

ALBION DIV., McGRAW-EDISON CO., 704 N. Clark, Albion, Mich. — Booths 335, 337

ALCO VALVE CO., 865 Kingsland Ave., St. Louis 5, Mo. — Booth 932

John E. Dube, George J. Boepple, Tom J. Phillips, R. N. Meyer, Arley L. Baker, Robert E. Spence, James W. Parrott, C. Wachholtz, J. J. Cassady, V. V. Solomon, Erwin Lodwig, A. A. St. Germain, T. Russell, L. J. Bonhotal, R. Monti, John A. Schenk, Ralph Tilney.

Thermo expansion valves, solenoid valves, pressure regulators, ADK filter-driers, expansion valves and reversing valves for heat pumps. ADK filter-drier will be featured.

ALDRICH CO., Wyoming, Ill. — Booth 1051

H. C. Burbridge, N. Howard, F. McFerran, B. Mulder, P. M. Stephenson.

Complete line of low pressure steel heating and hot water supply ASME boiler-burners, fired interchangeably by oil or gas and as standard or prewired accessory-equipped package units. Also, high pressure conversion oil burners. Series H commercial water heaters with submerged copper coil, available in outputs from 135 to 1296 gph, 100 F rise, will be featured.

ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wisc. — Booths 556, 558, 560

ALLIED CHEMICAL CORP. — see GENERAL CHEMICAL DIV.

ALLIED THERMAL CORP. — see TUTTLE & BAILEY DIV.

See layout of exhibit hall on pages 214 and 215 for booth locations.

ALLIS CO., LOUIS, 427 E. Stewart, Milwaukee 1, Wisc. — Booth 1049

Bernie Flatly, Claude Alexander, Jack Goodale, Fred Luber, Bill Barta, Cliff Finney, Joe Meisner, Dean Dillon, Art Allen, Bill Vaughn.

Variety of electric motors which have application in the heating and air conditioning industry and include "Air-Over-Fan" motors, "Hermetic" motor, "Immersible" motor and a short length compact, "Pancake" motor, plus standard open and enclosed type motor cutaways. First showing of encapsulated motors using new insulation systems called "Capsular," and "Capsulex" which provide added protection to motor windings.

ALNOR INSTRUMENT CO. DIV. OF ILLINOIS TESTING LABORATORIES, INC., 420 N. La Salle St., Chicago 10, Ill. — Booth 672

A. A. Obermaier, M. J. Rauscher, W. J. Bailey, J. J. Kuska, M. D. Carlson, J. S. Babor, Jr., M. E. Rake, Jr.

Temperature measuring and control instruments, air velocity measuring equipment, dew point apparatus. New air velocity transducer equipment for continuous indicating, recording or controlling air velocities in air conditioning and ventilating systems will be featured.

ALUMINUM CO. OF AMERICA, New Kensington, Pa. — Booths 765, 767

AMERICAN AIR FILTER CO., INC., 215 Central Ave., Louisville 8, Ky. — Booth 40

AMERICAN ARTISAN, 6 N. Michigan Ave., Chicago 2, Ill. — Booths 723, 725

Chas. E. Price, Wallace J. Osborn, Robert A. Jack C. M. Burnam, Jr., George C. Cutler, Thomas V. Johnson, Clyde Barnes, Robert J. Osborn, William B. Sutherland, William Strong.

"American Artisan" — monthly magazine on warm air heating, air conditioning, sheet metal contracting, ventilation and dust removal; reprint books; market data and information.

AMERICAN COOLAIR CORP., 3604 Mayflower St., Jacksonville 3, Fla. — Booths 1038, 1040

Ned A. Patton, Harry M. Graves, Wallace W. Allen, Kurt S. Sprengling, Edward Filkins, Ed Niederhofer.

Industrial exhaust fans, belt drive, 24 to 72 in.; power roof ventilator, belt drive, 24 to 60 in.; exhaust fans, direct drive, 10 to 36 in.; wall shutters and backdraft dampers. Model factory demonstrating "Coolair Breeze" conditioning for personnel comfort will be featured.

AMERICAN ENGINEERING CO., 4114 Pennsylvania, Kansas City 11, Mo. — Booth 54

AMERICAN FURNACE CO., 1300 Hampton Ave., St. Louis 10, Mo. — Booths N-315, N-317, N-321

AMERICAN GAS ASSOCIATION, 420 Lexington Ave., New York 17, N.Y. — Booths 520, 532, 633

AMERICAN GILSONITE CO., Municipal Airport, P.O. Box 15, Salt Lake City, Utah — Booth 841

A. S. Klopf, J. H. Henderson, E. T. Smith, C. O. Tibbits, F. S. Zuzick, C. J. Cooley.

"Gilsulate" for underground hot pipe insulation. Display will include realistic model of an installation, plus boxed trench in which will be installed and insulated a length of pipe with "Gilsulate." Thermocouples will be connected to pipe wall and at varying distances from pipe to show insulating efficiency in finished installation.

AMERICAN IRON AND STEEL INSTITUTE — see COMMITTEE OF STEEL PIPE PRODUCERS

AMERICAN MACHINE AND METALS, INC. — see AUTOMATIC DEVICES DIV.

AMERICAN METAL MFG. CO., 200 N. Main St., Farmersville, Texas — Booth 1056

R. E. Allison, Sr., Maurice G. Lautenslager.

Samples of "Helix Lockseam" pipe and fittings used in high velocity air conditioning systems.

AMERICAN PULLMAX CO., INC., 2455 N. Sheffield, Chicago 14, Ill. — Booth N-320

E. G. Kihlstrom, L. W. Behrendt, M. D. Schlender, D. H. Talmage, R. R. Nehf, J. F. Steger.

Models P-5 and P-7 universal shearing and forming machines, and new model X-8 beveling machine, a cost cutting and time saving machine that bevels plate prior to welding.

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC., 234 Fifth Ave., New York 1, N.Y. — Booth 701

R. C. Cross, J. H. Cansdale, F. W. Hofmann, W. J. Gatenby, W. C. Klish, Isobel Sullivan, C. M. Humphreys, E. R. Searles, C. H. Flink, C. W. MacPhee, Julia I. Szabo, A. T. Boggs, III.

Highlights of activities of society in fields of research, membership and publications and services to heating, refrigerating, air conditioning and ventilating professions.

AMERICAN-STANDARD Air Conditioning Div., 40 W. 40th St., New York 18, N.Y. — Booth 26

AMERICAN-STANDARD Controls Div., 5900 Trumbull Ave., Detroit 8, Mich. — Booths 24, 106

AMERICAN STANDARD Industrial Div., 8111 Tireman Ave., Detroit 32, Mich. — Booths 20, 22

John F. Tobin, J. W. Hosler, T. I. Harriman, John Soule, R. A. Loebl, H. C. Grubb, J. A. Wheeler, H. W. McClure, R. C. Habicht, A. J. Simpson, R. W. Butler, J. M. Hammond, W. F. Currise, A. G. Carlson, J. F. Hillery, D. L. Wilson, C. J. Henstock, R. W. Dallas, C. T. Hastings, R. R. Adamson, J. J. Rix, J. R. Lewis, A. L. Thurman, R. C. Walsh, K. E. Martin, S. P. Garnett, C. K. Ferguson, W. R. Perry.

Capillary air conditioners, heating and ventilating units, heating and cooling coils, hermetic liquid chillers and refrigerating machines, package boilers, airfoil bladed fans, centrifugal roof ventilators, gas fired unit heaters, packaged utility sets, ventilating and exhaust fans, packaged air conditioners.

AMERICAN-STANDARD Plumbing and Heating Div., 40 W. 40th St., New York 18, N.Y. — Booths 23, 27

LeRoy J. Beisher, Harold D. Gullinksen, W. C. Schmeltzer, William A. White, George Hackett, Al Melly, Paul Phalon, Carl Steen, S. H. Kelleran, J. J. Cambal, V. H. Hoefling, George Dresselhouse, J. J. Decker, D. J. Quinn, F. J. McGrath, R. W. Hawkins, L. G. Shenk, R. E. Olson, J. Heslin, L. Fritts, C. J. Milton, S. P. Kiselick, L. Thomas.

Packaged boilers, gas fired boilers, oil fired boilers, baseboard heating, convection and radiation, burners. Emphasis will be placed on added features of equipment which help reduce installation costs and make hydronics more competitive.

AMERICAN TUBE & CONTROLS, INC., 100 Pulaski St., West Warwick, R. I. — Booth N-112

C. H. Kirk, Jr., J. Belham, D. H. Meader, C. J. Murman, F. Davenport, D. J. Mullen, C. Smith, J. J. Saunders.

Hot water heating accessories, featuring "Ex-Trol" pressurized diaphragm type expansion tank; "Fill-Trol" expansion tank with built in automatic fill valve; base slide couplers, modern expansion joint for baseboard radiation and hydronic mains; "Hammertrol" piston type pre-charged standpipes for suppressing hydraulic shock.

AMERICAN WARMING & VENTILATING CO., 1017 Summit St., Toledo, Ohio — Booth 650

J. E. Johnson, W. P. De Han, R. L. Alley, E. H. Johnson, Lucille A. Johnson.

Wall and ceiling shutters, fire dampers, air control dampers, stationary weather louvers, adjustable weather louvers, door louvers, sun louvers, architectural grillework, louvered penthouses, fabricated of various materials such as lead, galvanized sheet, extruded aluminum, and fiber glass.

AMMERMAN CO. INC., Box 182, Stillwater, Minn. — Booth 429

C. L. Ammerman, E. A. Ammerman, T. L. Ammerman, James Barr, Gerald O'Dwyer.

"AirMpeler" loboy power roof exhausters, built-in self acting dampers; "Swing-O-Way" exhaust systems; garage exhaust systems. "AirMpeler" unit will feature novel idea of factory installing the self acting dampers in frame of unit to eliminate costly installation of dampers in roof curb where they are hard to maintain. "Swing-O-Way" system has tractable tubing with swing of 180 deg. New "AirXpeler" spun unit is sturdy with low contour. Garage systems built for powerful motors with dual exhausts, includes fixtures for trucks and tractors.

ANDERSON CO., THE V. D., Div. of INTERNATIONAL BASIC ECONOMY CORP., 1935 W. 96th St., Cleveland 2, Ohio — Booth 1018

William J. Gleason, Jr., M. L. Waldron, E. J. (Jim) Nevins.

Cut-away models of "Super Silvertop" inverted bucket steam traps, "Heat-Kwik" combination steam traps, "Quick-Flex" thermostatic steam traps, 80 series float type traps for condensate or moisture. Also purifiers, air release valves, pipe line strainers.

ANEMOSTAT CORP. OF AMERICA, 10 E. 39th St., New York 16, N.Y. — Booth 29

W. F. Peters, F. Honerkamp, W. Waeldner, R. Miller, J. Mutoli, A. R. Gilbert, R. Nemmers, J. Simatovitch, C. Jacobs, F. B. Kurth, V. F. Self, G. R. Wallen, J. Schaeffer, R. F. Hayes.

Conventional air diffusers, high velocity sound attenuators, turbulators, air meters.

ANSUL CHEMICAL CO., Marinette, Wisc. — Booth 966

L. C. McKesson, J. H. Jarrett, Ed Beacham, John Bopp, E. M. Billings, Bill Dufrane, Jim Maurer, John Worthington, Tom Lester, Glenn Iams, Vance Rutledge, Walter Krause, Al Berg, Jim Bowman.

"T-Flo" driers, "Dry-Eye" moisture indicators, refrigeration oil, receiver driers, "T-Flo" drier manifolds, "Ucon" refrigerants. New in-line drier will be featured, as will special refrigerants promotion.

APEXTRO PRODUCTS CO., 1821 N. Eastlake Ave., Los Angeles 31, Calif. — Booth N-434

William A. Petro, Ernest E. Petro, Edward D. Wirth.

"Infratube" and "Inframite" electric radiant heaters with quartz tube elements. Two new models will be introduced, one an addition to "Inframite" line which is a portable unit with cord and tiltproof switch. The other model will be an "Infra-Hot" unit for the food serving industry, to keep food warm before serving.

ARGO INDUSTRIES, INC., 524 Wethersfield Ave., Hartford 14, Conn. — Booths N-130, N-132

Arthur R. Godbout, Allan Godbout, John Moriarty, Walter Majcak.

Panel trim baseboard, "Eastern" slim trim baseboard, panel wood baseboard, electric baseboard, relay transformer, boilers, zone valves, controls.

ARKLA AIR CONDITIONING CORP., 812 Main St., Little Rock, Ark. — Booths 526, 528, 530, 532

J. Alan Davis, W. G. Wepfer, Russell L. Brown, Chet Attwood, Paul Williams, M. B. Lancaster, R. J. Destiche.

"Arkla-Humphrey" multi-directional unit heaters, direct gas fired 25 ton water chiller-water heater, remote 5 ton "Sun Valley," "Sun Valley" year 'round air conditioning units, "Arkla-Humphrey" circulators, "Gaslites." Several "Gaslites" will be given away.

ARKLON PRODUCTS CO., P.O. Box 3501, Cleveland 18, Ohio — Booth 766

Philip Borkat, George Zingsheim, Joseph Butler, Charles J. Davis, O. W. Dobson, William Freiden, Martin Geraghty, T. S. House, Mal Aldrich, Colman Kramer, Richard H. Pentecost, Edward J. Walker, William H. Wiggins.

"Bon-Air" atomizing humidifiers.

ARKOS MFG. CO., 7310 Woodward Ave., Detroit 2, Mich. — Booth N-108

A. A. Kosarin, B. A. Kosarin, F. Lappin, A. R. Mikovitz, F. C. Bernhard, R. A. Clapp III, B. Stromquist, J. J. Heilman, J. P. Johnson, M. Rutishauser, A. F. Jurack, R. Sharp, A. J. Sharp, R. A. Sharp, R. W. Dwight, Jr., A. B. Keller.

Direct fired heater for combination oil and gas firing; packaged scotch marine three pass fire tube boiler for combination gas and oil firing. Heater will have cut-away section to reveal unique and significant structural and design features. Boiler will emphasize compactness, accessibility, ease of installation and maintenance.

ARMCO STEEL CORP., Middletown, Ohio — Booth 1207

ARMSTRONG CORK CO., West Liberty St., Lancaster, Pa. — Booths 1042, 1044

F. S. Donnelly, Jr. will be in charge.

"Armaflex 22" (flexible foamed plastic pipe insulation with built-in vapor barrier); rigid "Armaflex" (rigid form of foamed plastic for use at hangers and load bearing areas); "Armalite" (white foamed plastic insulation board for low temperature applications); sundries (including adhesives and coatings).

ARMSTRONG FURNACE CO., DIV. NATIONAL UNION ELECTRIC CORP., 851 W. Third Ave., Columbus 8, Ohio — Booth 6

W. J. Olsen, R. Guda, E. Clifford, H. Hays, C. Bower, E. Wagstaff, R. Wentz, P. Norton, L. Sherman, D. Calori, H. J. Hasenohrl, J. Buchwald, G. M. Mahnensmith, B. Leslie, R. Hancox.

New 700 series compact gas fired furnaces in basement, upflow and counterflow models, 60 to 160,000 Btu; new oil fired basement model furnaces; new air conditioner evaporators and condensers for central air conditioning. 700 series gas fired furnaces of new compact design, permanent washable filter, small flue pipe sizes; new burners and heat exchanger, will be featured.

ARMSTRONG MACHINE WORKS, 816 Maple St., Three Rivers, Mich. — Booths 625, 627

ARROW-HART & HEGEMAN ELECTRIC CO., 103 Hawthorn St., Hartford 6, Conn. — Booths 663, 665

Dave Reynolds, George Heiden, Chet Benoit, Tom Hutchinson, Fred Cross, Bill Garten, Ed Sturkey, John Yaskot, Roy Morrell.

Complete line of manual and magnetic motor starters for both standard and hermetic motors; accessory items such as relays, pushbuttons, special purpose switches. New ambient compensated overload with balancing bimetal will be featured.

ARVIN INDUSTRIES, INC., 1531 13th, Columbus, Ind. — Booths N-230, N-232

Leo Burns, Joe Freeland, Glenn Flint, Wm. Yeager, Harold Seigle.

Ceiling heat panels — exposed grid, "Invisa-Line" panels; built-in wall heaters; ceiling cable; electric heat wall panels; vinyl metal laminates.

ASCOT GAS WATER HEATERS, INC., 222 W. Pittsburgh Ave., Milwaukee 4, Wisc. — Booth N-440

Lauren H. Nichols, Michael Stower, Howard Obst, Walter Eble.

Wall mounted, gas fired, domestic boilers, capacity to 120,000 Btu; wall mounted instantaneous gas fired water heater for special applications; boiler unit for hydronic applications that has many desirable applications due to its high efficiency, light weight, wall mounting characteristics will be featured.

ASSOCIATED LABORATORIES INC., 26845 Southfield Rd., Lathrup Village, Mich. — Booth N-126

E. I. Strom, A. Anderson, D. R. Borgeson, J. A. Porter, W. T. Leak, F. Card.

"Hydrotrol" controller that automatically adds water treatment to cooling towers and controls bleed-off in direct proportion to water evaporated. "Chemicator" feeder that feeds briquetted treatments to cooling towers to prevent scale, algae, and corrosion will also be shown.

AUER REGISTER CO., THE, 6600 Clement Ave., Cleveland 5, Ohio — Booth 1009

George R. Metzger, H. F. Curtis, George R. Metzger, Jr., Al Bechtel, Paul Havel.

Registers, grilles, and diffusers for heating, ventilating, and air conditioning; metal clothes chute doors; V-type door louvers; perforated ornamental grilles. No. 100 "Perfusaire" base diffuser, the millionth off exhibitor's production line, will be goldplated and featured.

AURORA PUMP DIV., THE NEW YORK AIR BRAKE CO., Loucks at Dearborn, Aurora, Ill. — Booth 568

R. D. Elder, C. A. Nordstrom, C. W. Swenson, H. W. Parker, H. J. Miller, W. L. Korthauer, H. D. Chase, others.

Heating and air conditioning pumps, condensate return units. Cavitation demonstrator showing effects of cavitation to workings of pump will be featured.

AU-TEMP-CO CORP., 657 Broadway, New York 12, N.Y. — Booth 425

Ed. J. Zeitlin, A. Fowler, G. Miceli.

Electronic indoor-outdoor heating controls, motorized valves, remote positioning and indicating control.

AUTO-FLO CORP., 12085 Dixie, Detroit 39, Mich. — Booths 302, 401

Milton Perlman, Joseph Perlman, David Perlman, John Christian, and all sales representatives.

Automatic humidifiers, plenum power humidifiers, portable power humidifiers, fuel oil filters, permanent washable air filters.

AUTOMATIC DEVICES DIV. of AMERICAN MACHINE AND METALS, INC., Sellersville, Pa. — Booth N-504

H. T. Kucera, F. A. Hebenstreit, E. P. Fahey.

Heating controls: "Weather-Man", "Weather-Flo" (six models), "Weather-Chron", multiple boiler sequencer heating controls. Several models of multiple boiler sequencers with system and outdoor sensing elements will be introduced.

AUTOMATIC HUMIDIFIER CO., DIV. of STANDARD MFG. CO., 220 E. Fourth St., Cedar Falls, Iowa — Booth N-129

M. K. Voorhees, John C. Christensen, J. H. Galloway.

"Thermo-Drip" and "Vaporite" humidifiers.

AVON TUBE DIV., HIGBIE MFG. CO., 4th & Water Sts., Rochester, Mich. — Booth N-337

C. M. Higbie, Jr., E. P. Robinson, Al G. Pinder, M. G. Coulter, V. J. McAvoy.

Steel tubing. "Fulton Fusionbrazed" — Double wrapped hydrogen brazed, also "Brazeweld" welded type with copper finish ID and OD. Both for all refrigeration and heating requirements. Exhibited for the first time will be "Brazeweld" welded steel tubing, copper finish ID and OD with internal cleanliness to ASTM 254-58 standards.

BACHARACH INDUSTRIAL INSTRUMENT CO., 200 N. Braddock Ave., Pittsburgh 8, Pa.—Booth 1024

Rudolf Ulrich, J. A. Stein, John W. Smith, J. V. Palmer, George Gardner.

"Fyrite" combustion testing kits, "Tempscribe" temperature and operation recorders, "Florite" and "Floret" air velocity meters, "Monoxor" for carbon monoxide detection, gas pressure manometers, "Tempoint" air circulation thermometer, filter gauges to signal when filters need to be changed, sling psychrometer.

BALTIMORE AIRCOIL CO., INC., P. O. Box 7322, Baltimore 27, Md.—Booth 39

John Engalitcheff, Jr., William Kahlert, James Honeywell, Chick Overend, Kenneth Watson, Patrick Geraghty, Carl Schroeder, Thomas Facius, Donald Geiser, John Morris, George Klein, William Wherley, William Brown, Harry Miller, Morris Older.

Two new 150 ton "blow-through" cooling towers will be in operation. The first unit is a standard quiet operating, centrifugal fan tower, one of 1960 line of cooling towers from 10 to 800 tons. The second unit is a newly developed multi-stage propeller fan cooling tower that combines low operating horsepower with centrifugal fan quietness.

BARBER-COLMAN CO., 1300 Rock St., P. O. Box 99, Rockford, Ill.—Booths 506, 508

D. J. Stewart, C. J. Braatz, E. A. Greenlee, C. P. Yates, P. Van Dae, R. M. Guthrie, R. A. Hipp, C. A. Cibelius, D. V. Kelley, J. R. Muraski, R. M. Plettner, C. E. Radford, A. W. Schach, R. D. Schmidt, R. E. Schuette, C. S. Schwab, J. F. Schwartz, R. P. Sweger, J. R. Winston, W. G. Young.

Automatic controls and air disttribution products for heating, ventilating and air conditioning. New line of wall-mounted thermostats, modular "Scan-O-Matic" control center, transistorized controls, self-contained constant volume regulators, continuous line adjustable ceiling diffusers, "Mobilex" combination diffuser and lighting troffer will be featured.

BARKE PRODUCTS INC., 501 Vineland Rd., Bay Village 40, Ohio—Booth 446

Merl S. Hanke, A. A. Hanke, W. Slaght, Jr.

Pressed and stamped steel pulleys (A. O. section V-groove zinc plated); rubber V-belts; variable pitch pulleys (stamped steel, zinc plated).

BARNEBEY-CHENEY CO., Cassady at Eighth, Columbus 19, Ohio—Booth 1111

BARRY BLOWER CO., 3100 California St., NE, Minneapolis 18, Minn.—Booth 720

Herman Freidson, Ben Barry, L. P. Hanson.

Centrifugal fans, type FC and non-overloading; belted ventilating sets; industrial fans; components for air handling. Line of newly developed and custom styled centrifugal fans for general ventilating and air conditioning application, models indicating new designs of several different styles of equipment, will be featured.

BASO INC., 730 N. Jackson St., Milwaukee 1, Wisc.—Booth 851

J. H. Thornbery, H. A. Mihm, D. R. Weidenfeller, L. W. Bowerman, V. C. Kitzrow, S. L. Kile, J. H. Muth, L. C. Thompson, R. W. Mabbs, F. R. Shibilski, E. E. Kriege.

Automatic pilots, automatic valves, thermocouple leads, pilot burners, related control accessories.

BASTIAN-MORLEY CO., INC., 200 Truesdell Ave., La Porte, Ind.—Booth N-342

Sealed combustion water heater, gas water heaters, sealed gas heaters, gas hydronic heating, gas winter air conditioning units, gas vented recessed wall heaters. Demonstration of zone heating with individual room control with sealed gas units, controlled from one central control panel, will be featured.

BAYLEY BLOWER CO., A DIV. of THE GREEN FUEL ECONOMIZER CO., INC., 1817 S. 66th St., Milwaukee 14, Wisc.—Booth 1104

BELL & GOSSETT CO., 8200 N. Austin Ave., Morton Grove, Ill.—Booth 911

R. E. Moore, W. A. Boone, A. B. Meeg, E. F. Ford, P. C. Kosch, G. U. Miller, C. Towns, H. Barclay, J. Flasch.

Booster pumps, "Airtrol" systems, compression tanks, water heaters, flow control valves, relief and reducing valves, "Hydro-Flo Pak," universal pumps, "Thermoflo" indicators, industrial centrifugal pumps, air compressors, vacuum pumps, package liquid chillers, condensing units, refrigerant compressors, condensers, evaporators, gas driven chillers. Demonstration of "Duo Flo" balancing and purging valve, operating exhibit showing importance of pump location in a heating system, special display of "Hydro-Flo Pak"; new line of chillers and condensing units, including gas driven units, will be featured.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE CO., 950 E. Virginia St., Evansville 7, Ind.—Booths 309, 311

Frank A. Haag, Donald J. Wood, John Henning, Henry C. Preher, John W. Downen, Jack F. Fritchman, Myron C. Stevens, Ralph W. Bond, T. Gordon Ralph, all regional managers.

New "Oval-Line" motor compressors and condensing units, window air conditioning motor compressors, residential air conditioning motor compressors, commercial condensing units. New motor compressors for window and residential air conditioning units, condensing units for commercial applications will be featured.

BETHLEHEM FOUNDRY & MACHINE CO.—see DYNATHERM DIV.

BETTCHER MFG. CORP., 3106 W. 61st St., Cleveland 9, Ohio—Booths 1223, 1225

R. F. Sharon, Joseph W. Adams, Paul H. Goodell, Ralph E. Stinson.

Gas fired overhead infra-red radiant heaters: CR-63, 50,000 Btu per hr output; CR-125 and CRH-125, 100,000 Btu per hr output. An operating CRH "Panelbloc" will be exhibited, showing the healthful and pleasant infra-red energy for heating.

BINKS MFG. CO., 3100 Carroll Ave., Chicago 12, Ill.—Booths 1062, 1064

C. R. Kranz, A. G. Stacy, R. W. Plutz, Jas. Doherty.

Induced draft and forced draft cooling towers, all hot dipped galvanized after fabrication. Both lines offered in capacity range from 5 to 300 tons refrigeration.

BLOOMER COOLING TOWER DIV.—see FISKE CO.

BOHN ALUMINUM & BRASS CORP., DANVILLE DIV., 1625 E. Voorhees St., Danville, Ill.—Booth 606

H. B. Thomas, W. H. Markson, P. G. Kayser, W. B. Buck, L. E. Jennings, D. H. Gold.

New line of "Bohn-Aire" fan-coil units available in four models in each of five sizes; model CH horizontal air conditioning unit in sizes 2 through 10 tons; new line of air cooled condensers in sizes up to 60 tons. This will be first time "Bohn-Aire" unit has been displayed at any show; it features quiet operation.

BOILER ENGINEERING & SUPPLY CO. INC., Manavon St., Phoenixville, Pa.—Booth N-443

Russell E. Emrich, Walter B. Riley, Joseph A. Hohenleitner, Patrick D. Goggin, Maurice W. Williams, Joe David, Frank Hawkinson, George Egart, Chas. O'Sullivan, Roy Armbrust.

Automatic "Continental" packaged boiler, two pass design, burning oil, gas or combination fuels; "Flo-Kontrold" HTW boiler available from 4 to 100 million Btu per hr, vertical and horizontal design.

BOOTZ MFG. CO., INC., 1400 Park St., Evansville 7, Ind. — Booth 232

BOYLE ENGINEERING LABORATORY DIV. of ROTHERM ENGINEERING CO., INC., 7280 W. Devon Ave., Chicago 31, Ill.—Booth 745

H. S. Kuhn, R. B. Borucki, George Reed, Gordon Rune.

Revolving joints, expansion joints, room type humidifiers. Humidifier is new and will be on display for the first time.

BRANDES CO., 2046 Winnebago St., Madison 4, Wisc.—Booth 763

E. E. Brandes, A. A. Campbell.

Forced air baseboard, baseboard diffusers, residential and commercial; forced air cabinets, both standard models and models specifically manufactured to requirements and specifications. New line of forced air cabinets of unusual design will be introduced, design allowing for incorporation of any linear type diffusion grille on the American market today.

BREIDERT CO., THE G. C., 13690 Vaughn St. (P. O. Box 1190) San Fernando, Calif.—Booth N-229

G. M. Breidert, R. S. Jones, W. E. Rude, H. E. Gross.

Roof ventilators, power and gravity.

BROOKSIDE CORP., P. O. Box 38, McCordsville, Ind.—Booth 52

Claude Forth, Sr., Claude Forth, Jr., Boyd E. McKinney, Bill Schelske, John Wooden, Bill Glynn, Wick Brundage, Sam Stein, Duane Hale, Robt. McAndrews.

All sizes and configurations of fan blades, blower wheels, and air moving equipment for heating, air conditioning, refrigeration, and ventilating equipment. New blower wheel design consisting of an all welded construction will be featured.

BROWN PRODUCTS CORP., A., 1080 Springfield Rd., Union, N. J. — Booth 729

Jack Ahrens, A. Brown, Frank Sieffert, Chic Meehan, Jack Daly.

Hot water baseboard radiation. Residential line, same enclosure accommodating ¾ and 1 in. elements, designed for silent operation on new installations and remodeling jobs, featuring high output combined with attractive, "slim-trim" appearance, will be shown.

BROWNING MFG. CO., Maysville, Ky. — Booth 607

Frank Jones, Lou Browning, Dick Johnson, Bill Fluke, Ed Seyk, Terry Ochs.

V-belt sheaves, V-belts, ball and roller bearing units, MVP (multiple variable speed) sheaves. Running model of MVP drive will be featured.

BRUNDAGE CO., THE, 512 N. Park St., Kalamazoo 11, Mich. — Booths 609, 611

BRYAN STEAM CORP., Chili Pike, Peru, Ind. — Booth N-138

O. C. Skinner, Harold V. Koch, Donald R. Robinson, James Barr, Gerald O'Dwyer.

Water tube boilers for steam space heating and hot water space heating, commercial domestic water heaters, high pressure steam generators, oil and gas fired equipment.

BUENSOD-STACEY CORP., 45 W. 18th St., New York, N. Y. — Booth N-444

M. S. Smith, R. O. McGary, R. M. Warren, Jr., J. W. Kreuttner, N. S. Shataloff, J. C. Rose, R. Sandler, D. Rickelton, W. Scott.

Dual duct air mixing units, dual purpose units for multi-zone or dual duct application, under window enclosures for dual duct units, high and low pressure access doors, tap off fittings for high velocity systems, high pressure slips for ductwork (slip joints). Automatic self-contained volume control in dual duct units will be featured.

BUFFALO FORGE CO., 490 Broadway, P.O. Box 985, Buffalo 5, N. Y. — Booths 832, 933

BURGESS-MANNING CO., 749 E. Park Ave., Libertyville, Ill. — Booths 313, 315

J. E. Varlie, W. A. Gill, C. Bruggen, A. Roewade.

Metal pan radiant heating, cooling and acoustical ceilings. Display will present a typical room and finished ceiling installation.

BURKE AND CO., 2902 Hyde Park Blvd., Los Angeles 43, Calif. — Booth N-143

Val J. Burke, Frances F. Burke, Carl H. Deilgat, Valerie J. Deilgat, J. Michael Burke.

Air filters, adsorbers. Filters to be displayed are of the replaceable media type, also disposable type. Adsorbers are for gas and vapor to purify air, and utilize activated charcoal.

BURNHAM CORP., Heating & Cooling Div., 2 Main St., Irvington, N.Y. — Booth 714

Burnham Bowden, Virgil A. Good, John W. Murray, Jr., F. R. Brophy, Chester C. Carney, John A. Harris, J. Roy Knox.

"Base-Ray" cast iron radiant baseboards; Nos. 61 and 70 "Holiday" cast iron residential and commercial gas boilers; "Jubilee" packaged cast iron oil heating units, factory assembled and wired, with year 'round domestic hot water; new "Pace-King" boiler for residential or commercial installation, tankless coil available up to 15 gpm. New "Base-Ray" damper will be introduced for first time; meets FHA regulations for series loop installations. Eliminates shut-off valves, can be opened and closed with flick of the finger.

BURNHAM CORP., Steel Boiler Dept., 2 Main St., Irvington, N.Y. — Booth 710

A. J. Hall, D. E. Hawk, C. J. Shine, J. Barr, J. O'Dwyer, F. Crook, C. E. Noel, D. Rosenberg.

Scotch-type three-pass steel boiler. First anniversary of this new boiler will be marked with boiler attractively finished to blend in with background exhibit.

BURNHAM CORP., Warm Air and Cooling Div., Fourth and Main Sts., Belle Vernon, Pa. — Booth 706

Cloyd Weaver, J. T. Bennett, A. R. Mavis, Leonard White, George McCrory, Richard Rutledge, S. L. Harris, William Krieger.

Oil and gas fired hiboy, loboy, counterflow, suspended, gravity units; self-contained and remote type cooling equipment.

BYERS CO., A. M., 1610 Clark Bldg., Pittsburgh 22, Pa. — Booths 1124, 1126

G. B. Coffey, W. J. Blaschke, R. Spurgin, E. Rhodes, T. J. Bacalis, J. Smith.

Both wrought iron and plastic polyvinyl (PVC) pipe, piping materials noted for superior corrosion resistance.

CALGON CO., A DIV. of HAGAN CHEMICALS & CONTROLS, INC., Hagan Bldg., Pittsburgh 30, Pa. — Booth 755

CALUMET & HECLA, INC. — see FLEXONICS CORP., and WOLVERINE TUBE DIV.

CAMBRIDGE FILTER CORP. 738 E. Erie Blvd., Syracuse 1, N.Y. — Booth 914

D. H. Northrup, D. E. Wendel, P. M. Engle, W. W. Baldwin, R. H. Avery. Also, sales representatives from different parts of the country.

Wide range of high efficiency air filters and many of their modifications which have made the manufacturer a pioneer in high efficiency air cleaners.

CARGOCAIRE ENGINEERING CORP., 15 Park Row, New York 38, N.Y. — Booth N-243

Oliver D. Colvin, Thomas McCraine, Robert W. Furman.

Dual bed desiccant dehumidifier; "Honey-Combe" dehumidifier; "Dewpointer"; humidity, temperature and dewpoint instrumentation; "Miniveil." "HoneyCombe" will be introduced, and "Dewpointer" and "Miniveil" featured.

CARNES CORP., Verona, Wisc. — Booth 940

R. W. Krogstad, F. A. Freese, D. H. Neviaser, T. L. Smith, P. L. Engler.

Air distribution outlets, power roof ventilators, louvers, dampers, acoustic terminal control units, forced air baseboard diffusers. Acoustic terminal control unit for all air high velocity systems, and new concept in air diffusers by display of modular diffusers will be featured.

CARRIER AIR CONDITIONING CO., Carrier Pkwy., Syracuse 1, N.Y. — Booths 549, 569

Gordon Bond, Vincent Day, Gordon Dinger, Samuel Hillen, William Hillen, Hermann Hoffmann, John Kooistra, Owen Kuhen, William Lake, George Long, Frank Purcell, Maurice Wilson.

Complete line of self-contained and applied air conditioning and refrigeration equipment, including three revolutionary new room terminal units that feature linear ceiling diffusion, built-in bypass controls, and central heating and ventilation with provision for added cooling. Engineering aids to consultants, and display of specific and general air conditioning markets, will be featured.

CASH VALVE MFG. CORP., A. W., 666 E. Wabash Ave., Decatur, Ill. — Booth 707

G. W. Madden, W. P. Klein, R. Ray.

Pressure reducing and regulating valves for water, air, oil, steam; relief valves for water heaters; vacuum breakers; vacuum relief valves. New ASA 1958 temperature and pressure relief valves for water heaters, and new "Hydrozone" motorized valve for zone control, applicable on water and steam, will be featured.

CENTURY ELECTRIC CO., 1806 Pine St., St. Louis 3, Mo. — Booth 915

J. E. Baranski, R. L. Biller, W. D. Helm, R. M. Hicks, W. M. Seneff, G. M. Smith, W. C. Wetlaufer, P. F. Williams, V. J. R. Hartling, F. E. Nutt.

Electric motors, single phase and polyphase; fractional horsepower and integral horsepower up to 125 hp. Examples from complete new rerated line of standard motors will be featured.

CENTURY ENGINEERING CORP., 211 4th Ave., S.E., Cedar Rapids, Iowa — Booth 962

B. J. Lattner, F. G. Johnson, M. J. Merfeld, C. Walker, G. F. Carney, R. F. Considine, J. S. Davis, E. J. Mettelka, Harold C. Sparks, H. J. Stites.

Full line of residential and light commercial warm air heating and cooling equipment. Heating and cooling packages which allow merchant builders to include year 'round heating and cooling in homes selling from $9000 to $13,000 will be featured.

CERRO CORP. — see LEWIN-MATHES CO.

CHACE CO., W. M., 1600 Beard Ave., Detroit 9, Mich. — Booth 1030

C. F. Alban, E. W. Bloch, C. F. Zeigler, H. C. Wiedemann, W. C. Hill.

Display of customers' thermostats and thermal mechanisms to demonstrate application of thermostatic bimetal.

CHAMPION BLOWER & FORGE CO., INC., Harrisburg Ave. & Charlotte St., Lancaster, Pa. — Booth 651

H. K. Long, H. S. Kelley, George Revak, Robert Collins.

Centrifugal fans and blowers.

CHATLEFF VALVE & MFG. CO., 205 Industrial Blvd., P. O. Box 996, Austin 66, Texas — Booth N-415

CHICAGO BLOWER CORP., 9867 Pacific Ave., Franklin Park, Ill. — Booths 602, 703

F. H. Gohl, E. R. Anderson, D. W. Davis, W. E. Driver, R. Jeffrey, A. P. Rosenquest, E. Sevck, P. Ruble, J. Rasfeld, L. Burns, J. E. Peterson, H. F. Thomas, L. L. Case, R. C. Leinberger, W. F. Lynch, P. E. Evans, A. J. Bauer, G. Baker, T. A. Heidenreich, H. Prieve, H. N. Jacobs, F. J. Orians, R. Bredenfoerder, J. K. Shadek.

Airfoil centrifugal fans; new axial fans; mechanical draft fans; dust control fans; packaged fans. Will feature "Airfoil" advances and new fan and blower designs.

CHICAGO PUMP, Hydrodynamics Div., 622 Diversey Pkwy., Chicago 14, Ill. — Booth 31

Ray Trethaway, John Kudelas, Al Kral, Richard Karz, Doug Schumaker, Bob Grietzer, Ray Hunt, John Gray, Jerry Lettvin, S. L. Bartlett, Dave Boyell, Cal Kramer, Ray Selwyn, Syd Steiner.

Sewage ejectors—VCS, vertical non-clog pumps; UW submersible; "Flush Kleen" systems. Condensate pumps—S-R, AVC packaged type; NVC vertical below floor return; "Condo-Vac" return vacuum boiler feed. Hot and cold water pumps—DS-DPA horizontal split case double and single suction; FC, CC vertical split case flexible and close coupled. New DPA horizontal split case, double suction centrifugal pump with novel design for exact positioning of impeller and facilitating removal and realignment of rotating assembly, and new FCP vertical split case flexible coupled pump with external stuffing box connections for water and grease sealing will be featured.

CHICAGO STEEL FURNACE CO., 2350 Lunt Ave., Elk Grove, Ill. — Booths 645, 647, 649

E. Rexroth, F. Grothe, G. Goldschmidt.

"Maxi-Therm" warm air furnaces, "Climate Makers" air handling units.

CHRYSLER CORP., AIRTEMP DIV., 1600 Webster St., Dayton 1, Ohio — Booths 1159, 1169.

R. B. Stotz, J. S. Weigle, C. S. Cave, W. L. Regan, H. Young.

New packaged water chiller, an air handling unit and a fan coil unit; small air cooled condenser designed for small homes or apartments; new series of heat pumps.

CLARAGE FAN CO., Kalamazoo, Mich. — Booth 810

R. A. Wasson, S. H. Downs, C. R. McConner, J. S. Skillman, C. O. Fury, N. A. Melzer.

New "Twinalator;" blow-through "Multitherm" with new "Humiblend" section; centrifugal fans; unitary fan parts for original equipment manufacturers. Introduction of new "Twinalator," which provides both air supply and exhaust simultaneously with one roof top unit, only one opening and one motor involved, will be featured; no separate make-up air unit necessary. New "Humiblend" section on "Multitherm" line, which provides for dehumidifying make-up air and prevents excessive build-up of room humidity under light internal sensible load will be introduced.

CLEAVER-BROOKS CO., 326 E. Keefe Ave., Milwaukee 12, Wisc. — Booth 33

CLEVELAND CONTROLS, INC., 1111 Brookpark Rd., Cleveland 9, Ohio — Booth 1221

N. F. Hahn, J. C. Weinberg, J. P. Metz, L. A. McGuire, Jack Mannle, C. A. Wagner.

New "Master Monitor" lead-lag sequence controller for multi-boiler systems, available in a single compact enclosure; metering, positioning and transmission systems, a new line of components for combustion control including master controllers, master transmitters, submasters, ratio controllers, master regulators, actuators, remote manual stations and indicators (electronic transmission systems); other boiler room instrumentation. Animated displays of "Master Monitor," and electronic transmitter used in positioning and metering systems will be featured.

CLEVELAND STEEL PRODUCTS CORP., TORIDHEET DIV., 16025 Brookpark Rd., Cleveland 35, Ohio — Booths 724, 728

COBRA METAL HOSE, 5059 S. Kedzie Ave., Chicago 32, Ill. — Booths 1026, 1028

Clyde D. Greeno, Paul J. Firring, Jack Owings, Darrel Harter, Victor Sipovic, Ray Meydrech.

Flexible metal hose connectors, pump connectors, vibration absorbers, coupler; "Form-A-Line" hydronic connectors; exhaust absorbers; gas appliance connectors; flexible pipe; flexible nipples. Exhibit will show a variety of flexible connectors mounted to equipment, illustrating installation applications; large display of connectors for hydronic heating systems; air conditioning and refrigeration applications.

COLEMAN CO., INC., THE, 250 N. St. Francis, Wichita 1, Kans. — Booths 1245, 1247, 1249

COLLINS MACHINERY CORP., 955 Monterey Pass Rd., Monterey Park, Calif. — Booth N-347

Robert H. Collins, Louis Marcil.

Pipe threading and cutting machinery, abrasive cut-off machinery. Recently designed "Abr-A-Saw" wheel type cut-off machine for safe operation and "Thred-O-Matic" machines for threading, cutting and reaming pipe will be featured.

COLORADO OIL AND GAS CORP., MARSH INSTRUMENT CO. DIV., Skokie, Ill. — Booths 639, 641, 643

COLUMBIA BOILER CO. of POTTSTOWN, Pottstown, Pa. — Booth 655

R. W. Boarman, J. J. Meade, V. Beno, D. J. Wilke, S. Armbruster.

HRT packaged steam generator, high capacity hot water heaters, "Columbian" packaged domestic boiler burner unit, standard L series tubeless and water tube steel boilers, baseboard radiation, oil and gas burners. Worldwide distribution will be featured.

COMBUSTION CONTROL DIV., ELECTRONICS CORP. OF AMERICA, 1 Memorial Dr., Cambridge, Mass. — Booth 12

COMMERCIAL CONTROLS CORP. — see ELECTROMODE

COMMERCIAL FILTERS CORP., 2 Main St., Melrose 76, Mass. — Booth 411

J. R. Chisholm, R. Olsen, H. A. Wilson, J. Hopkins.

Complete line of "Fulflo" filters for air and liquids, various capacities, operating pressures and in various construction materials, incorporating patented honeycomb filter tubes of various densities down to 1 micron particle removal. New porous stainless steel filter element for high viscosity, corrosive and high temperature fluids will be featured.

COMMITTEE OF STEEL PIPE PRODUCERS, 150 E. 42nd St., New York 17, N.Y. — Booth 709

George D. Lain and Eugene M. Smith, plus representatives of Committee sponsors.

Steel pipe for its various uses for heating and air conditioning.

CONCO ENGINEERING WORKS INC. — see FIELD CONTROL DIV.

CONDENSATION ENGINEERING CORP., 3511 W. Potomac Ave., Chicago 51, Ill. — Booth N-421

B. A. Johnson, Wayne Limbert, Walt Aschliman, Tom Jones, Otto Zeman, Jim Graham, George Anderson.

"Vitroliner" prefabricated chimneys and chimney lining pipe.

CONGRESS DRIVES DIV. — see TANN CORP.

CONNOR ENGINEERING CORP., Shelter Rock Lane, Danbury, Conn. — Booth 142

H. A. Baker, P. F. Canavan, J. A. Gray, H. H. Todd, Jr., E. Gordon Stocks, T. L. Day, A. L. Thayer.

"Kno-Draft" air diffusers, round, square, rectangular, linear, perforated, grilles and registers; "Kno-Draft" high velocity air mixing boxes; "Pneumavalve" air flow regulator; "Dorex" activated charcoal air recovery and air purification equipment. "Pneumavalve" air flow regulator that can be used wherever air must be controlled and which needs no mechanical linkage or operators, and series 45P valve attenuator for dual duct, constant volume, high velocity air distribution systems will be featured.

CONTINENTAL AIR FILTERS, INC., P.O. Box 1647, Louisville 1, Ky. — Booth 1033

Frank B. Johnston, Jr., Sidney S. Emison, Arthur Klein, John H. Isert, George Jenkins, Robert S. Hoover, Randolph Rowe, L. P. Bryant, Robert S. Snider, Richard A. Durham, Crawford Robertson.

Automatic self-cleaning air filters; automatic and manual vertical and horizontal roll type air filters; viscous panel filters, high and low velocity, steel and aluminum construction; dry type panel filters, all capacities and efficiencies. Full scale models of all products will be on display.

CONTINENTAL MFG. CO., P. O. Box 4048, Baltimore 22, Md. — Booth 1173

Edward Izbicki, Added Sales Co., Michel Sales Co., McCoy Sales Corp., Stuart W. Meehan, Lester E. Hyde.

Gas fired hydronic boilers.

CONTRACTOR, THE, 230 W. 41st St., New York 36, N.Y. — Booth N-546

Publication.

CONTROLS CO. OF AMERICA, Heating & Air Conditioning Div., 2450 N. 32nd St., Milwaukee, Wisc. — Booth 803

COOK CO., LOREN, 640 N. Rocky River Dr., Berea, Ohio — Booth 644

Loren Cook, Emil Rudy, Thomas McKelvey, William J. Walker.

Direct drive roof fans, wall exhausters (centrifugal wheel), belt drive roof ventilators (centrifugal wheel), belt drive roof ventilators (axial fan), direct drive roof ventilator (axial fan). Theme of exhibit is based on planned ventilation for any type of building. Will show the ventilator and important features by use of translites.

COOL HEAT, DIV. of DRYING SYSTEMS CO., 1800 Foster Ave., Chicago 40, Ill. — Booth N-242

Russell H. Burgess, Arthur P. Strong, William Straba, Richard Domka, Gale Wicks.

Heat pump, air-to-air, 20 hp, self-contained; air cooled condensing unit, 15 ton; compressed air driers; refrigerant charging units; refrigerant vacuum pumps. A 20 hp heat pump, air-to-air, will be in operation.

COPELAND REFRIGERATION CORP., Sidney, Ohio — Booths 515, 517

CRS INDUSTRIES INC., 1405 Locust St., Philadelphia 2, Pa. — Booth 327

William C. McMichael, Michael H. Pelosi, Jr., George Maleno, Joseph Mahlbacher.

"Statronic" dirt, dust and odor control systems. Unique demonstration showing effect of shattering dust particles by "Statronic" system will be featured.

CRANE CO., P. O. Box 780, Johnstown, Pa. — Booths 825, 826, 829, 924, 927, 928

"Sunnyday" 8 PTA boiler, National — U. S. "O" series boiler, "Sunray" IV boiler, "Sunnyday" 15-3 PTA boiler, No. 36 gas fired boiler, single 66 gas boiler, single 47 boiler, "Sunray" radiator, cast iron baseboard, packaged air conditioner, commercial fin pipe, products of industrial group, Pacific Boiler Div. and Cyclotherm. Introductions of the National "O" series boiler and the Crane "Sunnyday" III boiler will be featured.

CURTIS MFG. CO., Refrigeration Div., 1905 Kienlen Ave., St. Louis 33, Mo. — Booths 850, 951

H. C. Morrison, H. J. Nettler, K. T. Rockey, C. E. Malone, N. H. Behrend, Howard E. Smith.

Packaged air conditioning units, packaged liquid chillers, roof-top unit for heating and cooling. New roof-top unit, which provides year 'round temperature control, will be featured to show how this completely assembled package has been engineered for labor saving installation and elimination of costly maintenance problems.

CUTLER-HAMMER INC., 315 N. 12th St., Milwaukee 1, Wisc. — Booth 1155

K. M. Nelson, B. M. Horter, Jr., G. A. Rauch, R. A. Haworth, F. A. Wright, R. L. Hibbard.

"Unitrol," fire pump control, new size 5 starter, resistance heating elements, thermostats, overload relays, sizes 00 — 4 starters. Special emphasis on importance of reliability in the heating and air conditioning field will be given.

CYCLOTHERM — see CRANE CO.

DANFOSS, Nordborg, Denmark — Booths 135, 137, 139

DEKORON PRODUCTS DIV., SAMUEL MOORE & CO., Main and Orchard Sts. Mantua, Ohio — Booth N-124

Arthur O. Grumney, Will Toll, Herbert Grandage, Ray M. Cordon, James R. Simpson, Heinz H. Cook, George H. Freundlich, Richard Klitchman, John T. Edwards, Robert E. Brumbach, Hans Johansen, E. D. Evans, Robert Thomas.

Single line plastic and plastic coated metal tubing and plastic and metal tubing bundles for use in heating, piping and ventilating controls.

DELAVAN MFG. CO., 811 Fourth St., West Des Moines, Iowa — Booth 1021

J. D. Hopkins, E. O. Olson, R. E. Keene, Fred Mulcahy, L. N. Beardsley, J. O. Hill, G. H. Tate, Wm. Gustafson.

Nozzles for heating, air conditioning; nozzle accessories, including adapters, filters, strainers; nozzle tools, including wrenches, mirrors, boxes, racks.

DELCO APPLIANCE DIV., GENERAL MOTORS CORP., P. O. Box 230, Rochester 1, N.Y. — Booths N-330, N-332

P. H. Rutherford, J. T. Tighe, R. H. Gaudion, G. H. Diehl, R. L. Riddell, R. T. Reddington, A. Bommelje, R. R. Edelen, N. J. O'Brien, R. N. Brethen.

Complete line of gas fired "Conditionair" furnaces, together with remote and self-contained air conditioning units and heat pumps; gas fired boilers and water heaters. First showing of new 365 "Conditionair" line, including 1961 line of gas fired furnaces and air conditioning units.

DELCO PRODUCTS, DIV. OF GENERAL MOTORS CORP., 329 E. First St., Dayton 1, Ohio — Booth N-145

A. C. Wight, H. D. Watkins, H. E. Weisenborn, W. J. Wagner, K. E. Leighty, J. W. Brumley, J. D. Hughes, E. J. Boyer, R. W. Scott, O. G. Saettel, E. N. Moncrief, C. L. Holverstott, L. H. Shue, H. J. Redder, G. F. MacFarland, R. I. Gauby.

Motors for belt driven air moving applications, split phase, capacitor start, and polyphase shaded pole, and permanent split capacitor motors for direct driven fans and blowers; single phase and polyphase hermetic motors for refrigeration and air conditioning compressors.

DIEHL MFG. CO., Finderne Plant, Somerville, N. J. — Booth N-433

DODGE CORP., F. W., 119 W. 40th St., New York 18, N.Y. — Booth 868

DOERR ELECTRIC CORP., 510 N. 4th Ave., Cedarburg, Wisc. — Booth 572

J. H. Park, H. E. Ellis, G. L. Kunick, Lee A. Doerr, Emmett Doerr, H. W. Applegate, R. A. Potter.

Motors in both special and standard designs for air conditioning, refrigeration and heating industry. Included will be fan and blower motors with built-in three phase overload protection, motors for rotary oil burners, and pancake designs.

DOLE REFRIGERATING CO., 5910 N. Pulaski Rd., Chicago 46, Ill. — Booth 328

J. E. Hutchinson, J. J. Burge, H. De Baugh, B. P. Tweed, A. W. Monroe.

"Ice-Cel" ice accumulator unit for short term, high peak cooling loads such as in churches, lodge halls, funeral homes, etc.

DOMESTIC ENGINEERING, 1801 Prarie Ave., Chicago 16, Ill. — Booths N-414, N-416

Publication.

DONGAN ELECTRIC MFG. CO., 2987 Franklin St., Detroit 13, Mich. — Booth N-111

C. E. Hicks, J. B. Evans, Phil Becker.

Ignition transformers for oil and gas. New transformer tester for testing high voltage ignition transformers will be featured.

DORNBACK INDUSTRIES INC., 33220 Lakeland Blvd., Cleveland, Ohio — Booth N-239

Robt. F. Dornback, David A. Dornback, Wm. E. Schmeiler, Ralph Bittler.

Warm air furnaces, summer air conditioners, gas fired incinerators.

DOVER CORP., PEERLESS MFG. DIV., 1400 W. Ormsby Ave., Louisville 10, Ky. — Booth 243

DRAVO CORP., Neville Island, Pittsburgh 25, Pa. — Booths 1258, 1262

L. J. Dailey, C. R. Boyer, C. E. Snyder, A. P. Loeb, J. F. Stevens, H. H. Pinkerton, M. P. O'Laughlin, G. H. Strunk, W. G. Lesterick, G. R. Beidler, D. H. Felix, H. N. Wallerstedt, L. Eckert, R. G. Suren, W. C. Fink, W. A. Flanigan, F. N. Till, E. J. Zoladz, J. C. Swinderman, R. J. Sickmiller.

Model 50 "Paraflo" heater and model 100 "Counterflo" heater, units that provide economical warm air comfort heating, year 'round ventilating, process drying, tempering make up air and heat curing, for industrial and commercial applications. First "Counterflo" heater with stainless steel combustion chamber, forerunner of present line, has been in operation for over 15 years, burned 15,680,000 cu ft of gas, circulated more than two billion cu ft.

DRYER DYNAMICS CORP., Page & Schuyler Aves., Lyndhurst, N.J. — Booth 107

Tubular centrifugal fans.

DRYING SYSTEMS CO. — see COOL HEAT DIV.

DRYOMATIC CORP., 715 N. Fayette St., P. O. Box 591, Alexandria, Va. — Booth 210

Anthony Hass, Jay H. Heizer, Charles E. Wells, Ray Young.

Dehumidifiers, air dryers, and industrial moisture control systems; humidity control equipment of both mechanical refrigeration and desiccant adsorption types. Exhibit will explain application of humidity control to various industrial processes in the food, chemical, plastics, electronics and warehousing industries.

DU PONT DE NEMOURS CO. (INC.), E. I., 1007 Market St., Wilmington 98, Dela. — Booth 1211

Refrigerants by the "Freon" Products Div.; Organic Chemicals Dept. Custom-built exhibit will feature refrigerants, their applications and their specific qualities.

DUNHAM-BUSH, INC., 179 South St., West Hartford 10, Conn. — Booth 32

Cecil Boling, James A. Mulcahey, Alan S. Decker, Walter S. Browning, Perley Barker, John A. Roth, George Davis, James Gregory, C. J. Kimmel, Joseph Jacobs, Jr.

Multi-drive compressors and condensing units; roof mounted conditioners; steam converters; package chillers; air handling units; package air conditioners; steam and hot water specialties; centrifugal pumps radiation; pumps; control systems; unit heaters; inner-fin heat exchangers; oil separators; pressure stabilizers; other products. "One source-one responsibility" for air conditioning and heating products will be featured.

DURA-VENT CORP., 1400 W. Ormsby Ave., Louisville 10, Ky. — Booth 243

DURO DYNE CORP., Route 110, Farmingdale, Long Island, N. Y. — Booths 772, 773

Milton Hinden, Martin Gracer, Robert V. Chisholm, William D. Bogh, Arthur Simpson, Jr., John G. Thomas.

Complete line of sheet metal specialties, including flexible duct connectors, damper regulators, multi-blade damper hardware, other products associated with ductwork, featuring sheet metal machinery items new to the industry. "PinSpotter," an inexpensive tool for spotting insulation pins to ductwork, and "Cheekmaster," new machine that automatically cuts elbow cheeks, will be demonstrated.

DWYER MFG. CO., F. W., P. O. Box 373, Michigan City, Ind. — Booth 1016

J. G. Dwyer, P. W. Dwyer, John McKeague.

Standard line of draft gages, combustion testing equipment, air flow measuring devices, pressure switches, flow meters, all instrumentation relative to low air flow and differential pressures. New products, such as an extended line of pressure switches and new gages, will be featured.

DYNATHERM DIV., BETHLEHEM FOUNDRY & MACHINE CO., 225 W. 2nd St., Bethlehem, Pa. — Booths N-224, N-226

Chas. Bendix, Raymond Dietz, Chas. Diefenderfer, Jan Gunn, Ed Pegelow, John Sandberg, George Melbourne, Don Buschman, Carl Wagner, Jim Meissner.

Oil heating units, three sizes on display. Models 24W, 48/32W and 100 W, all complete package units. Burner head — combustion chamber clover-leaf showing minimum passage and combustion space. New sales manuals, kits, display sign, banner and advertising program — together with special "testimonial" proof booklet — will be featured.

ECONO PRODUCTS CO., INC., East Haddam, Conn. — Booth 1266

EDWARDS ENGINEERING CORP., 101 Alexander Ave., Pompton Plains, N.J. — Booths 624, 628

R. C. Edwards, N. J. Driscoll, E. A. Bogucz, J. Raskin, R. D. Estrem, M. A. Vogel, J. T. Deane, S. Schwartz, D. McCarthy.

Packaged zone control baseboard radiation and boilers, gravity cooling, packaged chillers, motorized zone control valves, electric boilers and baseboard. Completely packaged heating and cooling units, positive shut-off compact motorized valves, offpeak electric-hydronic storage systems, will be featured.

ELECTRIC BOAT DIV. — see GENERAL DYNAMICS CORP.

ELECTRIC HEAT & AIRCONDITIONING, 2 W. 45th St., New York 36, N. Y. — Booth 968

Publication.

ELECTRO-AIR CLEANER CO., INC., Olivia & Sproul Sts., McKees Rocks, Pa. — Booth 815

P. W. Aitkenhead, E. L. Baysek, C. V. Witalis, Dan Conroy, George Heack, Hank Fry, Jim McGivern, Henry Rodman, Paul McBride, Philip F. Petraglia, J. J. Dezort, Ted Hirsch, Dan Kassick, Van Stragand, Joe Suchy, Jim Morrow, R. C. Aitkenhead, Larry Woznichak, Joe Woznichak, Lloyd McClintock, John Deutsch, Harry Miller, Robert Creely.

Electronic air cleaner for all types of installations from single room to commercial and industrial buildings; automatic roll media type filters. Exhibit will include prototype of new portable self-contained unit for ballrooms, restaurants, etc.

ELECTRO DYNAMIC DIV. — see GENERAL DYNAMICS CORP.

ELECTROMODE, Div. of COMMERCIAL CONTROLS CORP., P.O. Box 1052, Rochester 3, N.Y. — Booths 413, 415

Paul D. Hawkins, Robert L. Briggs, J. K. Neuhauser, R. Vihon.

All-electric space heating equipment for homes, farms, industries, schools. Duct heaters which allow any package air conditioning system to be turned into an efficient heating system with insert duct heaters; suspension heaters, giving warehouse capacity with front office styling; and unit heaters for off season heating, spot heating of hard-to-heat areas and year 'round use, from 10 to 45 kw, will be featured.

ELECTRONICS CORP. OF AMERICA, COMBUSTION CONTROL DIV., 1 Memorial Dr., Cambridge, Mass. — Booth 12

ELGEN MFG. CORP., 32-49 Gale Ave., Long Island City 1, N.Y. — Booth 859

Louis Josephson, John J. Wyle, Bruno Speiser, Robert Alexander, Morris Goldsmith.

"Silent Duct" flexible duct connectors, "All-Tite" vane runner, "Air-Tite" duct tape, "Ball-O-Matic" and "Oppo-Matic" hardware, regulators and quadrants.

EMERSON ELECTRIC MFG. CO., THE, 8100 Florissant Ave., St. Louis 21, Mo. — Booths 542, 548

ENGEL SHEET METAL EQUIPMENT, INC., 8122 Reilly Ave., St. Louis 11, Mo. — Booths 101, 102, 201

Charles F. Engel, Joseph R. Yoch, Eric Anderson, Robert Enger, James Jeffries, George Johnston, Primo Rossetto, George Skirven, William Tanner, Mel Webster.

"Shopmaster", multiple notching units, "Edgemaster" flanger, open end flanger, "Edgenotcher", "Bendall", cleat bender, hydraulic metal seamer, "Jobmaster", laying out tools, "Rol-Formit." Live demonstrations of products will be featured.

ESSEX WIRE CORP. — see RBM CONTROLS DIV.

EXCELSIOR STEEL FURNACE CO., THE, 546 W. Washington Blvd., Chicago 6, Ill. — Booth N-324

J. S. McDonald, I. E. Brex, R. B. Clement, sales representatives.

Ducted air distribution products. New "Scotty" takeoff and adjustable plenums will be featured.

FAIRBANKS, MORSE Electricial Div., 303 N. Henderson, Freeport, Ill. — Booths 213, 215

Large horizontal weather protected type II induction motor, 600 hp, for pipe lines, petroleum and chemical plants subject to severe and varying weather conditions; newly developed "Lo-I" radial air gap motor in flange mounted construction, for application where space limitations are critical; line of standard general purpose motors with various electrical and mechanical modifications to meet industrial power drive applications, will be featured.

FARR CO., 2301 Rosecrans Ave., El Segundo, Calif. — Booth 10

G. F. Thruelsen, T. R. Turbeville, E. L. Williams, Frank Doody, John Ialeggio, George Buckman, Frank Cory, Clyde Rust.

Complete line of air filters ranging from automatic roll-type through high performance disposable filters and including special permanent panel filters of various types. Complete line of new knocked-down roll-type filters will be featured.

FASCO INDUSTRIES, INC., 255 N. Union St., Rochester 2, N.Y. — Booth 737

H. M. Sylvester, Sr., D. R. Schroedel, C. A. Button, J. M. Nolan, R. E. Waffle, P. R. Reid, D. M. Matthews, D. Keiner, W. A. MacDougall, B. R. Robinson, P. J. Talty, W. Agnew, R. Baart, A. Sleeter.

Complete line of shaded pole and permanent split capacitor motors and centrifugal blowers.

FEDDERS CORP., Hancock & Lalor Sts., Trenton 7, N.J. — Booth 702

J. P. Divizio, J. Guerra, C. Anzalone, J. Zonino, T. Arnold.

Display of hydronic equipment including radiation, convectors, unit heaters, and baseboard. New fan coil unit for chilled water and hot water will be featured.

FEDERAL BOILER CO., INC., Granite & West Sts., Midland Park, N.J. — Booth 11

FEE & MASON MFG. CO., INC., 21 Wyckoff Ave., Manasquan, N.J. — Booth 717

Thomas W. Mason, Charles Friedel, William J. Sliney, Walter A. Schlamp, Richard D. Jonathan, George Morman.

Pipe suspension equipment, including pipe hangers and rollers, variable spring hangers, constant support hangers, "FaMet" framing and accessories, "FaMet" continuous concrete inserts. Will feature complete line of pipe suspension equipment and accessories, including framing for any type of piping installation.

FELTER CO., JOHN and TRIANGLE ENGINEERING CO., 1309 Ashland, Houston 8, Texas — Booth N-505

John Felter, Pat Wells, Bill Taylor, W. W. Sampsel.

"Aero-Foil" ventilators; turbine ventilators (both wind brace and ball bearing models); S-caps ventilators; bases for "Aero-Foil," turbine, and S-caps ventilators. The "Aero-Foil" ventilator provides positive ventilation regardless of wind direction or wind velocity. With no moving parts, no back-draft, is designed so there is unobstructed air passage.

FIELD CONTROL DIV., CONCO ENGINEERING WORKS INC., Mendota, Ill. — Booth 732

Harry J. Potter, Henry Remsburg, Leo Pfister, Wayne Davis, Paul Jett, J. R. Starnes, John Sandberg.

Barometric draft controls for heating and processing equipment, where oil, gas, coal are the fuels, from 6 in. domestic sizes through 32 in. industrial sizes.

FISKE CO., BLOOMER COOLING TOWER DIV., 1237 W. 47th St., Chicago 9, Ill. — Booth N-335

Harry Curran, Jr., M. F. Esker, J. A. McNamara, R. L. Duntley, R. M. White, H. E. Danby & Co., E. H. Bellard & Co., Frank Stoeffel Equipment Co., B & W Sales Co., H. A. Barnard & Associates.

New model B6 series single flow package units and new model C6 series double flow package units. New modular series semi-package units with sizes up through 550 tons will be introduced.

FLANDERS FILTERS, INC., P.O. Box 718, Riverhead, N.Y. — Booth 536

John V. Moore, John W. Range, A. R. Allan, Jr.

Air filters, CBR units.

FLEXIBLE TUBING CORP., New Whitfield St., Guilford, Conn. — Booth 320

FLEXONICS CORP., Subsidiary of CALUMET & HECLA, INC., 290 E. Devon Ave., Bartlett, Ill. — Booths 538, 540

Bud Kromer, E. A. Malling, R. R. Schneider, L. Jim Cullen, W. J. Gohl, Ralph Van Haren, Richard Smith, Robert Clarke, E. C. Langille, A. M. Pinkowski, Larry Cullen, Rob Edgar, E. L. Hiter, R. M. Quick, L. J. Fox.

Flexible metal components used in piping to absorb and correct piping motion and alignment; metal hose; expansion joints and compensators; pipe guides; anchors; roller supports; "Vibra Sorbers." Basic products in standard and special metal alloys in complete range of sizes for use in heating, piping, refrigeration and air conditioning will be featured.

FLINTKOTE CO., THE, — see VAN-PACKER CO. DIV.

FOOD MACHINERY AND CHEMICAL CORP. — see PEERLESS PUMP

FOREST CITY FOUNDRIES CO., THE — see NIAGARA FURNACE DIV.

FRAM AIRE CORP., Div. of FRAM CORP., 55 Pawtucket Ave., East Providence 16, R.I. — Booth 869

Steven B. Wilson, C. A. Wilson, E. B. Scripture, James Carmine, Donald Johnston, Ralph Rogers, Clyde Hendricks, S. B. Wilson, Jr., Harry Hoobler, Howard E. Robinson, Gordon Gifford, Clay Garrett, John L. Floyd, C. B. Gouert, Jr., John Cocharo, Frank Nary.

Permachem-treated air filters, room air cleaners.

FRAM CORP. — see FRAM AIRE CORP.

FRICK CO., W. Main St., Waynesboro, Pa. — Booth 1115

FUELOIL & OIL HEAT, 2 W. 45th St., New York 36, N.Y. — Booth 968

Publication.

FULLER CO. — see LEHIGH FAN & BLOWER DIV.

FULTON SYLPHON DIV. — see ROBERTSHAW-FULTON CONTROLS CO.

FURNAS ELECTRIC CO., 1000 McKee St., Batavia, Ill. — Booths 1146, 1148

W. C. Furnas, W. F. Lisman, J. M. O'Rourke, G. W. Smardon, H. D. Blake, C. F. Witschonke.

Current rated starters through 53 amperes; current rated contactors through 90 amperes; complete new line of 20-30-40 ampere contactor and starters; reduced voltage starting equipment including increment, resistance and auto transformer types. Controls specifically designed to satisfy the particular performance and space requirements of the air conditioning and refrigeration industry will be featured.

GALLAHER CO., THE, 4108 Dodge St., Omaha 31, Nebr. — Booths 562, 564

I. I. Solzman, D. M. Solzman, Harry Clo, Harry Gragg.

New "Super/Air-Van" in "Fiberglas" will be shown, as well as new products recently developed. Contemporary designs of low contour which also include extreme quietness with corrosion resistance will be featured.

GAS HEAT & COMFORT COOLING, 2 W. 45th St., New York 36, N. Y. — Booth 968

Publication.

GENERAL AIR PRODUCTS CORP., 14-40 Factory St., Cedar Grove, N.J. — Booth 754

GENERAL AUTOMATIC PRODUCTS CORP., 2300 Sinclair Lane, Baltimore 13, Md. — Booth 121

Carl R. Hellwig, Charles R. Langenfelder, Morrill Sales Co., Geo. F. Heath Co., E. B. Rouzer, Wilson Feldman, Floyd T. Whitney.

"Floorlevel" baseboard radiation; oil and gas fired hydronic boilers.

GENERAL BLOWER CO., 8618 Ferris Ave., Morton Grove, Ill. — Booth 1045

GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP., 40 Rector St., New York 6, N.Y. — Booth 246

H. L. Robbins, H. C. Burki, J. J. Tomlinson, N. H. Shirey, F. C. Hitchings, S. Muller, T. A. Wallace.

Complete line of "Genetron Super-Dry" refrigerants 11, 12, 22, 113, 114.

GENERAL CONTROLS CO., 801 Allen Ave., Glendale 1, Calif. — Booth 814

J. F. Ray, F. E. Weldon, J. A. Wolff, H. C. Cameron, D. S. Sterner, R. E. Cody, B. L. Lerch, R. Wheeler, and branch managers.

Complete line of industrial, commercial/domestic heating controls, air conditioning and refrigeration controls: Combustion controls and instruments, hi-flow gas valves, thermostats, etc. Display will include complete boiler control system incorporating all products manufactured by exhibitor. New simplified electronic flame-out safety system developed for commercial combustion applications will be featured.

GENERAL DYNAMICS CORP., ELECTRIC BOAT DIV., Groton, Conn. — Booths 132, 134

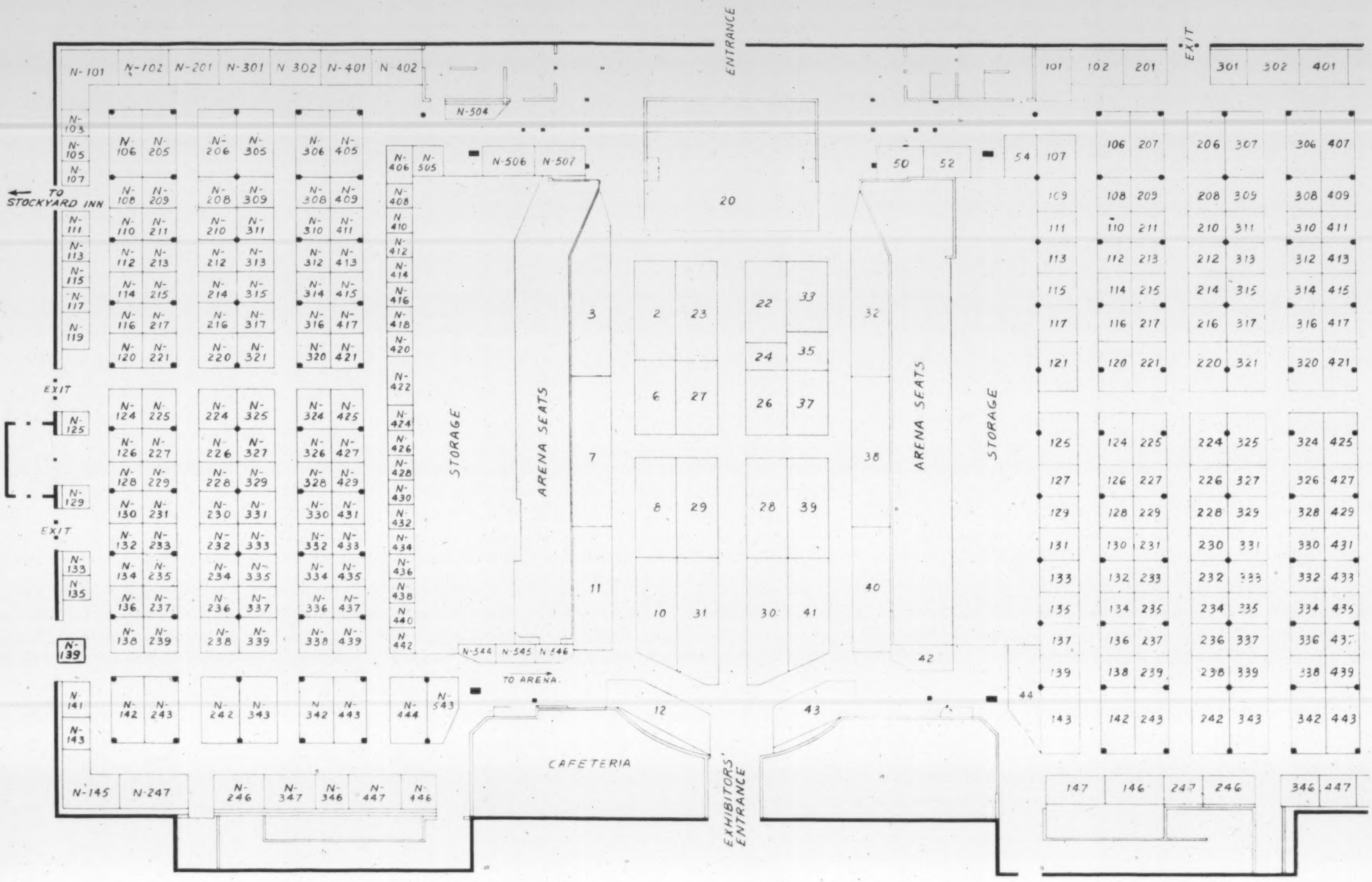
James A. Currie, Edward R. Davison, Daniel P. McGrath, Tom Ribadeneyra, Robert G. Boyce.

Variety of production models of new quiet-running "Turbo Slot" vaneaxial fans with patented slotted blade impellers, sizes 2 to 30 in. diameter. Will feature dynamic display of 5½ in. diameter fan which, running on ordinary 60 cycles, puts out 230 cfm at 1.0 in. WG static pressure with low noise level of 53 db.

GENERAL DYNAMICS CORP., ELECTRO DYNAMIC DIV., 163 Avenue A, Bayonne, N.J. — Booth 136

George Douglass, Dan McCarthy, Robert Hearn, Joe Hinchey, Edwin R. Campbell, Fred Burke.

Quiet operating motors, drip-proof and splash-proof motors, totally enclosed motors, explosionproof motors, large weather protected motors. Quiet operating low vibration "Silent Service" motor will be featured, which has been made possible by new quality control and manufacturing techniques developed in producing super-precision quiet operating motors for nuclear submarines.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6
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37
ARENA SEATS
STORAGE
N-124
N-225
N-224
N-325
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342
443
N-143
CAFETERIA
EXHIBITORS' ENTRANCE
N-145
N-247
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146
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246
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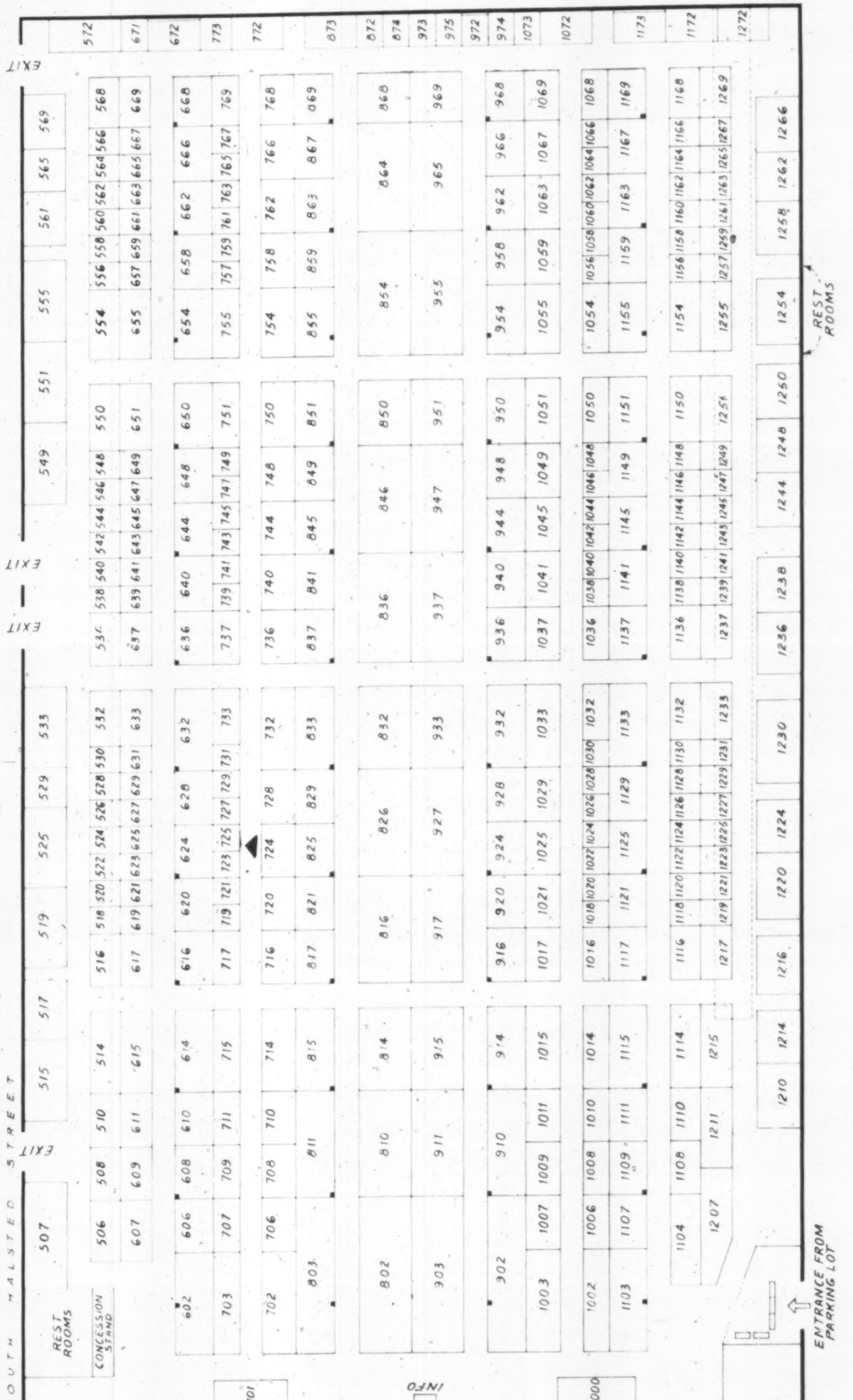
447

NORTH HALF of the exhibit hall, showing the booth locations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ENTRANCE FROM PARKING LOT

SOUTH HALF of the exhibit hall. You are invited to stop at Booths 723 and 725 when you visit the show

GENERAL ELECTRIC CO., Apparatus Sales Div., 1 River Rd., Schenectady 5, N.Y. — Booths 736, 740, 744

GENERAL FILTERS, INC., 43800 Grand River Ave., Novi, Mich. — Booth 762

Roland A. Redner, Robert P. Redner, William A. Miller, William E. Proctor, Mrs. Grace Redner, sales representatives from the field.

Complete line of fuel oil filters for both light and heavy fuel oils; warm air humidifiers; soot remover; industrial filters for machines.

GENERAL HEATING PRODUCTS CO., 7426 State Rd., Philadelphia 36, Pa. — Booth 414

Paul Bunten, Walter S. Wisniewski, George L. Brown, Allen Damasek, Roy Horton.

Boilers, gas and oil fired, domestic and commercial; baseboard and convector radiation. New models of gas fired boilers and baseboard radiation will be featured.

GENERAL MOTORS CORP. — see DELCO

GENERAL PRODUCTS CO., INC., P. O. Box 887, Fredericksburg, Va. — Booth N-338

J. E. Rowell, F. C. McGready, R. A. Hearn, E. S. Kent, R. B. Wright.

Prefabricated factory built all fuel chimneys; double wall type B gas venting. Improved sootproof chimneys, longer length double wall vent pipe will be featured.

GENERAL THERMOELECTRIC CORP. (NEEDCO), Box 253, Princeton, N.J. — Booth N-246

James L. Malony, Dr. Irving Weingarten, Chas. Stahl, John Bangs.

Thermoelectric cooling modules — thermoelectric refrigerator. Refrigeration schemes which are noiseless, have infinite life, no moving parts will be featured.

GOODFELLOW CO., INC., E. D., 496 E. Bodley Ave., Memphis 6, Tenn. — Booth 1269

E. D. Goodfellow, C. E. Goodfellow, A. S. Mann, C. L. Goodfellow, F. E. Conaway.

Induced draft cooling towers, air cooled condensers, centrifugal pumps.

GORDON & PIATT, INC., P. O. Box 914, Winfield, Kans. — Booth N-543

GOVERNAIR CORP., 4840 N. Sewell, Oklahoma City, Okla. — Booth 507

W. L. Hunt, R. E. Estep, Chas. Russell, Wayne Smith, Fred Balzer, Bernie Leventhal, Wm. H. Hollingsworth.

Packaged commercial air conditioning units. Completely self-contained, both evaporative and air cooled condensers, will be featured.

GRAYSON CONTROLS DIV., ROBERTSHAW-FULTON CONTROLS CO., Long Beach Blvd. at Long Beach Freeway, Long Beach 5, Calif. — Booths 228, 230

H. F. Jacobsmeyer, M. R. Gilbert, M. F. Grace, R. D. Hall, J. F. Dorgan, W. L. Edwards.

Complete line of heating controls for both central and room heating, including new "elegante" wall thermostat.

GREAT AMERICAN INDUSTRIES, INC. — see RUBATEX

GREEN FUEL ECONOMIZER CO., INC., THE, BAYLEY BLOWER CO. DIV., 1817 S. 66th St., Milwaukee 14, Wisc. — Booth 1104

GREENHECK FAN & VENTILATOR CORP., Ross St., Schofield, Wisc. — Booth 310

B. A. Greenheck, R. C. Greenheck, A: G. Greenheck, Lawrence O. Grade.

Power roof and sidewall ventilators and fans.

GREGORY INDUSTRIES, INC., 28th St. & Toledo Ave., Lorain, Ohio — Booths N-325, N-327

GULF OIL CORP., Gulf Bldg., P. O. Box 1166, Pittsburgh 30, Pa. — Booths N-334, N-336

GUSTIN-BACON MFG. CO., 210 W. 10th St., Kansas City, Mo. — Booth 50

H. M. Grant, M. P. Crowther, R. C. Lang, Wm. Smurdon, R. C. Tyk, L. J. Doyle.

"G-B Duct" prefabricated glass fiber duct system for heating and air conditioning, "G-B Snap-On" one piece molded pipe insulation of fine glass fibers, "Ultralite" long glass fiber thermal and acoustical insulation for duct wrap and duct liner. Demonstrations of qualities of products will be featured.

H & H TUBE & MFG. CO., 245-275 N. Forman Ave., Detroit 17, Mich. — Booth 1238

HAGAN CHEMICALS & CONTROLS, INC., CALGON CO. DIV., Hagan Bldg., Pittsburgh 30, Pa. — Booth 755

HALSTEAD & MITCHELL, 705 Bessemer Bldg., Pittsburgh 22, Pa. — Booth N-217

Horace I. Schmidt, Harry R. Smith.

Air cooled condensers, cooling towers, air conditioning unit, water cooled condensers, air conditioning coils.

HAMMOND VALVE CORP., 1844 Summer St., Hammond, Ind. — Booth 747

M. R. Beschloss, Ed Sullivan, Jim Love, Wally Kutyna, Bob Gunderson.

Cross-section of complete line of bronze heavy duty valves, heating valves, and sweat valves for copper tubing. Quarter-sectioned samples of each category will be featured.

HARRIS & CO., ARTHUR, 210-218 N. Aberdeen St., Chicago 7, Ill. — Booth 721

HART & COOLEY MFG. CO., 500 E. 8th St., Holland, Mich. — Booth 1136

G. D. Heeringa, E. J. Rowder, J. H. Van Dyke, G. J. Braun, R. W. Gordon, R. J. Kubat, T. J. Macklin, W. K. O'Brien, R. Smeenge, R. J. Waalkes, W. Wessels.

New items in the register, grille and diffuser lines and in the gas vent line. New "Royalaire" all aluminum registers and grilles, constructed of aluminum extrusions throughout, will be exhibited for first time.

HASTINGS AIR CONTROL INC., 3215 Leavenworth, Omaha 5, Nebr. — Booths 863, 867

Milton Frankle, Phineas Wintroub, Felix Roth, Richard Wintroub, Lou Genung, Louis Wintroub, Bennett Cohn.

Air conditioning equipment, gas unit heaters and duct furnaces, gas power burners, "Hoist-It", "Clean-It".

HAYS MFG. CO., 801 W. 12th St., Erie, Pa. — Booth 1129

Lester L. Buzzard, Robert L. Hutchings, Russell F. Gifford, Robert J. Gisewhite, David Stoner, Ted M. Nagle, David E. Coon.

"Hush-A-Matic" electric zoning control valve specifically designed for individual room or area control in hydronic heating and air conditioning units and systems. Cut-away samples showing functioning component parts will be featured.

HEAT CONTROLLER, INC., 1900 Wellworth Ave., Jackson, Mich. — Booths 629, 631

J. A. Knight, Kenneth O. Schultz, Lee Ragsdale.

Self-contained air conditioners and heat pumps, remote air conditioners and heat pump, new larger tonnage self-contained air conditioner, window air conditioners, dehumidifiers, electric air duct heaters. New low cost self-contained air conditioner will be featured.

HEATING & AIR CONDITIONING CONTRACTOR, 92 Martling Ave., Tarrytown, N. Y. — Booth 731

Publication.

HEATING, PIPING & AIR CONDITIONING, 6 N. Michigan Ave., Chicago 2, Ill. — Booths 723, 725

Chas. E. Price, Wallace J. Osborn, Robert A. Jack, C. M. Burnam Jr., George C. Cutler, Thomas V. Johnson, Robert W. Roose, Donald R. Bahnfleth, Robert J. Osborn, William B. Sutherland, William Strong.

"Heating, Piping & Air Conditioning" — monthly magazine for consulting engineers; mechanical (heating, piping, and air conditioning) contractors; engineers with plants; engineers with big buildings. Reprint books. Market data and information.

HEAT-TIMER CORP., 657 Broadway, New York 12, N.Y. — Booth 425

Ed. J. Zeitlin, A. Fowler, G. Miceli.

Electronic weather actuated heating control, "Robot-Eye" combustion control, smoke alarms, recorder-totalizer, "Zonvalves," motorized valves, quick vent valves.

HEIL PROCESS EQUIPMENT CORP., 12901 Elmwood Ave., Cleveland 11, Ohio — Booth N-442

F. W. Arndt, R. E. Scheel, E. W. Vereeke, R. I. Peters, Don Stoltenberg.

Working models of corrosion resistant fans, built of solid plastic — axial, centrifugal, roof ventilators, fume scrubbers; solid plastic and lined steel; complete ventilation components — hoods, tank covers, ducts, stacks built of principally solid plastic. New solid plastic roof ventilator constructed of special formulated plastic to give maximum corrosion resistance will be featured.

HEIL-QUAKER CORP., 647 Thompson Lane, Nashville 4, Tenn. — Booths 129, 131

Len Conrad, George Hochstein, Pete Costomiris, Frank Leavitt, Tom Mitchell, Fred Zwanzig, Ed McVoy.

Full line of gas and oil central heating and air conditioning equipment. New oil burner and new gas furnace will be introduced.

HENRY FURNACE CO., THE, Medina, Ohio — Booth 30

Edward P. Hayes, Ronald W. Lindsay, James S. Garber, C. L. Grandstaff, E. G. Swain, E. H. Morris, T. J. Gorman, E. H. Welton, J. M. Beck, T. F. Chatwood.

Samples representative of complete "Moncrief" line of gas, oil and electric winter air conditioners; air and water cooled summer air conditioners; combination year 'round air conditioners; gas fired unit heaters; gas conversion burners; gas disposer units. New products include 2 and 3 hp air cooled, self-contained summer air conditioners; electric air conditioning furnaces; oil fired winter air conditioning with high air handling capacities; odorless, smokeless gas fired disposer units.

HENRY VALVE CO., 3215 North Ave., Melrose Park, Ill. — Booths 1217, 1219

C. V. Gary, E. Jones, R. W. Carvell, Geo. Schaefer, R. C. Johnson.

Flow control devices such as shut-off, pressure relief and check valves; driers and filter-driers; strainers; indicators, moisture and liquid; accessories for refrigeration, air conditioning, industrial applications. "Dri-Cor" two stage filter-drier with advanced design molded core plus granular desiccant; "Dri-Vue" moisture-liquid indicators that spell "Wet" or "Dry" along with color variation, single and double port types; "Golden Bantam" packless valves with new design features, will be shown.

HERCULES CHEMICAL CO., INC., 416 Broadway, New York 13, N.Y. — Booth N-346

Jay W. Fidler, Jack Levine, Martin Lipton, Mike Mercury, Tony Mercury, Steve Fitzgerald.

SWIF solder (50/50 solder and flux); SWIF 95 (95/5 solder and flux); tape dope; boiler compounds. Live demonstrations of tape dope and solder applications, plus sound color film, "Big League Soldering," with Mel Allen, will be featured.

HERRMIDIFIER CO., INC., 1810 Hempstead Rd., Lancaster, Pa. — Booth 127

P. A. Herr, E. E. Dussinger, Harold Sweeney, William McKeough, John Range, Leonard Kelley.

Complete line of atomizing type humidifiers for use in homes and line of industrial humidification equipment. Exhibit will feature domestic models in operation.

HIGBIE MFG. CO. — see AVON TUBE DIV.

HIGHSIDE CHEMICALS INC., 10 Colfax Ave., Clifton, N.J. — Booths 972, 974

A. R. Shelby, J. F. Post.

"Thawzone" liquid refrigerant dehydrant, "Leak Lock" joint sealing compound, "Trace" liquid leak detector.

HILD FLOOR MACHINE CO., INC., 1217 W. Washington, Chicago 7, Ill. — Booth N-418

Joseph F. Roti, Marvin Klein, Jim Connell, Frank Capace, Andy Swierski, Orlo Sterba, Bob Slominski, Bill Doris, Dick Piermattie.

Industrial vacuum cleaners for maintaining heating and air conditioning systems. Vacuum cleaners for use on 55 gal drum, eliminating rehandling collected waste, will be featured.

HILTI, INC., 73 Southfield Ave., Stamford, Conn. — Booth N-431

HI-PRESS AIR CONDITIONING OF AMERICA, INC., 405 Lexington Ave., New York, N.Y. — Booth 1172

S. W. Brown, R. H. Hood, I. B. Secord, Jerry Podell.

High pressure air handling unit, high pressure air pipe, high pressure mixing boxes. New design of air pipe to handle high pressure air, small diameter, airtight, and which handles air noiselessly, will be featured.

HOWELL ELECTRIC MOTORS CO., Howell, Mich. — Booths 1160, 1162, 1164

HUBBELL CORP., Hawley Rd., P. O. Box 700, Mundelein, Ill. — Booth 711

HUPP CORP. — see PERFECTION DIV.

HUPP CORP., TYPHOON AIR CONDITIONING DIV., 505 Carroll St., Brooklyn 15, N.Y. — Booths 234, 236, 238

HYDROTHERM INC., Northvale, N. J. — Booths 667, 669

J. F. Baier, W. F. Hosmer, K. F. Angelo, H. D. Staman, R. E. Finnin, E. J. Pegelow, J. V. Gunn, M. R. Cardwell, C. F. Rock.

Gas fired cast iron hot water heating boilers: residential series boilers, "Multi-Temp" heavy duty series boilers. Packaged boiler, including circulator, expansion tank and air elimination system; duo-service system for heating and domestic hot water supply; heating system for apartments, churches, etc., utilizing step-control for cycling of boiler units; and new heat exchanger for laundromat volume water heating and swimming pool heating will be featured.

ILG ELECTRIC VENTILATING CO., 2850 N. Pulaski Rd., Chicago 41, Ill. — Booths 1037, 1041

W. H. Rietz, J. J. Friedler, Jr., C. F. Rietz, R. E. Parker, C. W. Dexter, R. L. Rucker, E. R. Berkheimer, D. Ball, A. C. DeSmet, B. L. Casey, S. S. Tarnoff, R. C. Rasbid, L. G. Schmock.

Complete display of various types of ventilating and heating products, including three types of power roof ventilators, six types of centrifugal fans, two types of propeller fans, and four types of unit heaters covering the requirements of commercial, industrial, and institutional buildings of all kinds. A number of new products introduced during 1960 will be exhibited, and several models will be in operation.

ILLINOIS ENGINEERING PRODUCTS, AMERICAN AIR FILTER CO., INC., Racine Ave. at 21st St., Chicago 8, Ill. — Booth 40

ILLINOIS IRON & BOLT CO., Carpentersville, Ill. — Booth 306

Keith Merrick, John McClintock.

Hopper loaders; automatic coal stokers; stoker fired furnaces; commercial and industrial stokers that are universal in design for all coal bin locations, which automatically deliver coal from bin to boiler.

ILLINOIS TESTING LABORATORIES, INC. — see ALNOR INSTRUMENT CO.

IMPERIAL DAMPER CO. (listed with Mechanical Contractors Co.), 664 Edgecombe Ave., New York 32, N.Y. — Booth N-328

Herman Leben, Laurence Leben, Ross Paskilas, Leo Egan, G. A. Hendrickson, Harry Read.

Fire dampers, automatic dampers, extruded aluminum louvers, backdraft dampers, aluminum all weather grille. Fire damper constructed under the factory inspection and label service of Underwriters Laboratories will be featured.

IMPERIAL-EASTMAN CORP., 6300 W. Howard St., Chicago 48, Ill. — Booth N-228

Gordon J. Duerr, C. O. Engels, M. J. Butler, D. Snazelle.

Tube working tools and fittings.

INDEPENDENT REGISTER CO., THE, 3747 E. 93rd St., Cleveland 5, Ohio — Booth 739

Bruce N. Richardson, Karsten B. Solberg, Harold W. Ullman.

Registers and grilles for wall, ceiling, floor and baseboards for heating and cooling homes and commercial buildings. "Fabrikated" grilles and registers made of steel and aluminum, especially adaptable to large and unusual sizes for schools, hospitals, hotels and commercial structures, will be featured, as will a large aluminum grille.

INDUSTRIAL ACOUSTICS CO., INC., 341 Jackson Ave., New York 54, N.Y. — Booth 1103

Charles N. Rink, A. C. Hawthorne, Martin Hirschorn, Herman Seelbach, Jr., Joseph Maniscalco, Joseph Placco, Frederich Oran, and 52 representatives from U.S. and Canada.

"Quiet-Duct" silencer and "Conic-Flow" silencers for controlling fan noise in air handling systems; 'Quiet-Vent" silencers that allow air to be vented while keeping areas quiet; short-form precalculated noise control folder and data sheets. Straight-through silencer for control of noise in air handling systems, tested in and by qualified independent laboratories, and with lower pressure drop, more noise reduction, and less regenerated noise, will be featured.

INDUSTRIAL COMBUSTION INC., 4507 N. Oakland Ave., Milwaukee 11, Wisc. — Booth 28

J. V. Resek, H. J. McCoy, F. M. Jordan, L. R. Hafeman, L. E. Danielson.

"Highlander" boiler-burner unit for commercial and industrial heat or power; conversion oil burners, gas burners and combination gas/oil burners in capacities to 21,000,000 Btu. New "Highlander" scotch-type boiler-burner unit will be featured.

INDUSTRIAL ENGINEERING & EQUIPMENT CO., 24 Hanley Industrial Court, St. Louis (Brentwood) 17, Mo. — Booth N-438

INDUSTRIAL PLASTIC FABRICATORS INC., Endicott St., Norwood, Mass. — Booth 116

INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y. — Booths 659, 661

W. J. Kearns, S. B. Wolfe, Jr., S. S. Orben, W. W. Cramer, W. J. McElhaney, R. F. Totman, R. C. Enstam, D. J. Fazekas, B. C. Peabody, J. Crocker.

Complete line of centrifugal pumps, including both 1750 and 3450 rpm "Motorpumps" up to 25 hp, and several sizes of horizontally split case double suction pumps. Complete new line of quiet 1750 rpm "Motorpumps" will be featured, in addition to two styles of horizontally split case pumps.

INSTO-GAS CORP., 998 E. Woodbridge Ave., Detroit 7, Mich. — Booth 1022

James F. Hirshfeld, William W. Steinert, John L. Drennan, William F. Carroll.

LP-gas soldering torches, LP-gas melting furnaces, portable LP-gas blower heaters, salamanders and infra-red heaters, both LP-gas and electric.

INTERNATIONAL BASIC ECONOMY CORP. — see THE V. D. ANDERSON CO.

INTERNATIONAL HEATER CO., 101 Park Ave., Utica 2, N.Y. — Booth 811

A. I. Whiteley, I. C. Barber, C. H. Bremer, G. E. Johnson, E. C. Marcum, F. L. Banner, J. E. Rhodemyre, N. Chandler, L. Lininger.

Complete 1961 line of heating and cooling equipment, conversion burners and accessories. 1961 models of electric furnace, "Powershot" gas conversion burner, heat pumps, remote and packaged cooling units will be featured.

IRON FIREMAN MFG. CO., 3170 W. 106th St., Cleveland 11, Ohio — Booths 950, 1108

IRON FIREMAN MFG. CO. — also see PETRO DIV.

ISOFLEX SALES CO., 1564 Rollins Rd., Burlingame, Calif. — Booth 727

Richard D. Baker, Thore M. Elfving, Sven T. Elfving.

K20 insulation panels, unique material composed of laminated non-corrosive corrugated layers of aluminum foil with glass fiber spacers. Display will show the mechanics of the multiple vapor barrier effect.

ISOTRON DIV., PENNSALT CHEMICALS CORP., 3 Penn Center, Philadelphia 2, Pa. — Booths 209, 211

JACKES-EVANS MFG. CO., 4427 Geraldine Ave., St. Louis 15, Mo. — Booth N-227

JACKSON & CHURCH — see YORK-SHIPLEY, INC.

JANITROL HEATING & AIR CONDITIONING DIV., MIDLAND-ROSS CORP., 400 Dublin Ave., Columbus 16, Ohio — Booths 519, 525, 529, 533

W. Egan, C. C. Owen, W. Schweitzer, K. Black, L. Schaefef, K. G. Hull, C. Langendorf, R. Balk, J. McAfee, L. J. Monahan, M. Tappero, E. Barr, R. Johnke, A. Baker, W. Morrison, L. Farese, T. Langan, R. Ramsay, R. E. Ireland, P. A. Ryan, E. Saurborn, K. Crider, W. Sheets, H. C. Gurney, L. W. Sutherland, W. Myler, John Van Dyne, Doyle Tilton.

Complete line of heating and air conditioning for residential, commercial and industrial applications. Specially featured will be new roof-top heating and cooling unit for commercial and industrial applications.

JENKINS BROS., 100 Park Ave., New York 17, N.Y. — Booth 1230

JENN-AIR PRODUCTS CO., INC., 1102 Stadium Drive, Indianapolis 7, Ind. — Booth 833

L. J. Jenn, H. J. Kennedy, Frank J. Gaither, Rex Welch, J. W. Schwier, E. J. Kurek, E. M. Filkins, E. C. Niederhofer, Milt Westlund, Richard W. Martin, R. D. Strickler.

QT sound control curb for 90 percent reduction of sound power at inlet of fan while only reducing 10 percent of air delivery; new line of skylights, plus companion series of skylight ventilators available in 1350 model variations; "Astro-Vent" for meeting lighting and ventilating requirements with air moving capacities from 180 to 4400 cfm; new line of belt driven centrifugal and axial power roof exhausters which provide up to 40 percent reduction in over-all height, 750 to 27,000 cfm.

JET-HEET, INC., 152 S. Van Brunt St., Englewood, N.J. — Booth N-313

Calvin D. MacCracken, Robert M. Barr.

"Jet-Heet" and "Jet-Cool" systems. New high velocity heating and cooling, using flexible insulated ducts only 2 in. in inside diameter and special aspirating registers, will be featured.

JOHNS-MANVILLE, 22 E. 40th St., New York 16, N.Y. — Booths 447, 448

Product managers, district managers and sales representatives will be in attendance.

"Transite" asbestos-cement air ducts, "Transite" asbestos cement vent pipe, "Cerafelt" precision molded pipe insulation, fiber glass and mineral wool duct insulation, fiber glass pipe insulation, "Aerotube" flexible pipe and tube insulation, "Dutch Brand" duct sealing tape, heating and cooling acoustical ceiling systems.

JOHNSON CO., S. T., Church Rd., Bridgeport, Pa. — Booths N-446, N-447

D. E. Johnson, W. J. Trombly, Al Dimick, E. E. Jensen, R. P. Johnston, W. E. Lees, W. S. Harlacher, Frank Scalia, Ray Knapp.

Complete line of commercial, industrial and residential oil, gas and combination oil or gas burning equipment.

JOHNSON FURNACE CO., THE, 2129 W. 117th St., Cleveland 11, Ohio — Booth N-405

C. A. Olsen, F. E. Johnson, James Crombie, F. J. Rau, Robert Marquis; Danny Deaver, Robert Crombie.

Gas and oil fired heating and cooling units for residential use, gas fired unit heaters. New line of gas fired unit heaters, new line of cooling equipment, and complete line of combination heating and cooling units will be featured.

JOHNSON HEATER CORP., 1 Winnisimmet St., Chelsea, Mass. — Booth 321

JOHNSON SERVICE CO., 507 E. Michigan St., Milwaukee 1, Wisc. — Booths 836, 937

JOHNSTON BROTHERS, INC., Ferrysburg, Mich. — Booth 402

R. J. Berwald, J. F. Johnston, Jr., J. B. Marstiller, L. D. Berwald.

Packaged boilers, oil and gas fired, series 509 and 200; air atomizing and rotary burners. Cut-away boiler in the 509 series highlighting the wet-back feature will be shown.

JOURNAL OF PLUMBING, HEATING & AIR CONDITIONING, THE, 92 Martling Ave., Tarrytown, N.Y. — Booth 731

Publication.

K S M PRODUCTS, INC., 301 New Albany Rd., Moorestown, N. J. — Booth N-343

Anthony Maladra, John F. Ewert, Robert W. Harding, William R. Bodine, Claude A. Batuk, Robert W. Hozier, Arthur E. Marriott, Richard S. Anderson, Mel Sundeen, Ralph A. Kohart.

"Mark XI" stud welding equipment, capacitor discharge stud welders, d-c power sources for stud welding, portable and bench model stud welders. Equipment will be on live demonstration stud welding fasteners to mild and stainless sheets, aluminum, brass, galvanized materials.

KEENEY PUBLISHING CO., 6 N. Michigan Ave., Chicago 2, Ill. — Booths 723, 725

Chas. E. Price, Wallace J. Osborn, Robert A. Jack, C. M. Burnam Jr., George C. Cutler, Thomas V. Johnson, Clyde Barnes, Robert W. Roose, Donald R. Bahnfleth, Robert J. Osborn, William B. Sutherland, William Strong

"Heating, Piping & Air Conditioning" — monthly magazine for consulting engineers; mechanical (heating, piping, and air conditioning) contractors; engineers with plants; engineers with big buildings. "American Artisan" — monthly magazine on warm air heating, air conditioning, sheet metal contracting, ventilation and dust removal. Reprint books. Market data and information.

KENNARD PRODUCTS, AMERICAN AIR FILTER CO., INC., 1819 S. Hanley Rd., St. Louis 17, Mo. — Booth 40

KENMORE MACHINE PRODUCTS, INC., Lyons, N. Y. — Booth 1236

KIMBERLY-STEVENS CORP., 1460 Broadway, New York 36, N.Y. — Booth N-326

KINGSTON-CONLEY INC., 900 North Ave., Plainfield, N. J. — Booths 1160, 1162, 1164

KOPPERS CO., INC., 200 Scott St., Baltimore 30, Md. — Booth 242

R. D. Lemmerman, J. Meyers, J. L. Phillips, L. P. Boeri, J. Onnen, G. A. Thomas.

New "Aircoustat" sound traps for air handling systems return air vent silencers, cylindrical mufflers, cooling tower silencers. "Live" demonstration of silencing products will be featured; a giant "Aircoustat" unit will be available through which visitors may walk and have product demonstrated.

KORFUND CO., INC., THE, Cantiague Rd., Westbury, Long Island, N.Y. — Booth 42

Alex Byfield, Maynard Wallin, Kirby Quinn, S. Lee Perlow, Joseph I. Hammond, Francis Kirschner, Norman Creash.

Products for control and measurement of shock, vibration and noise, incorporating use of steel springs, rubber and cork, damping materials, acoustical ducts, measurement and detection instruments and flexible connectors. Dynamic demonstration unit which illustrates effectiveness of various media for isolating vibration, and how changes in frequency of vibration effect efficiency of isolation media will be featured.

KOVEN & BROTHER, INC., L. O., Richboynton Rd., Dover, N. J. — Bootth 143

KRESNO-STAMM CORP., Palisades Park, N.J. — Booth N-333

KRITZER PRODUCTS, 5800 N. Pulaski Rd., Chicago 46, Ill. — Booth 1137

R. W. Kritzer, R. W. Kritzer, Jr., J. M. O'Connor, M. W. Knight, W. C. Kadow, Ed Garnaas, Eric Theis, Al Rutherford.

Hydronic system — heating and air conditioning (hot and chilled water); "Combinex" heating and air conditioning, high standing, floor, wall and ceiling models; "Hy-Lectric" electric heating units, high standing, floor, wall and ceiling models.

KRUEGER AIR CONDITIONING CO., 19 E. Rillito, P. O. Box 5155, Tucson, Ariz. — Booths 312, 314, 316

LAKE CHEMICAL CO., 3052 W. Carroll Ave., Chicago 12, Ill. — Booths 237, 239

Charles Kleiman, Dr. L. Aronberg, Charles J. Cassell, E. J. Reichenbach, Howard Reichenbach, Gus Makel, William C. Schenk, Warren E. Shattuck, J. H. Slaughter, E. N. Wirthlin, Jr., Charles R. Villyard.

"La-Co" fluxes, sealants, "Pipetite Tot," "Galvasite." Aluminum flux type TU-5 developed for the air conditioning and refrigeration industries for soft soldering aluminum evaporators, condensers, drip pans, etc., will be featured.

LARKIN COILS, INC., 519 Memorial Dr., Atlanta, Ga. — Booth 326

J. E. Palmer, S. D. Hughes, R. M. Shrader, K. W. Sims.

Remote air cooled condensers, air conditioning coils, heat transfer surface.

LAU BLOWER CO., THE, 2027 Home Ave., Dayton 7, Ohio — Booth 910

LAU BLOWER CO., THE — also see VIKING AIR PRODUCTS

LAWLER AUTOMATIC CONTROLS, INC., 453 N. Mac Questen Pkwy., Mt. Vernon, N.Y. — Booth 719

Adrian J. Meyers, James R. Lawler, Jr., R. C. Smith, Jr., Robert Immekus, Robert Boettjer, Parker Tyler.

Complete line of self-contained thermostatic temperature regulating valves. New products to be featured are temperature indicating self-contained thermostatic temperature regulator, and improved model of accurate and compact self-contained thermostatic cooling regulator.

LEECE-NEVILLE CO., Athens Highway, Gainesville, Ga. — Booth N-231

H. J. Zuske, R. G. Hill, G. L. Etheridge, J. P. Pichiutino.

Shaded pole motors, 1/200 to ½ hp; permanent split capacitor motors, 1/20 to ½ hp. New design permanent split capacitor motor and new reversible window fan motor will be featured.

LEHIGH FAN & BLOWER DIV., FULLER CO., Catasauqua, Pa. — Booths 1239, 1241

A. K. Dilliplaine, R. F. Miller, I. W. Ehlmann, C. C. Kaesemeyer.

Backward inclined blade fan, induced draft fan, industrial exhauster.

LEIGH INDUSTRIES INC. (AIR CONTROL), Coopersville, Mich. — Booth 407

R. L. Leigh, K. L. Babcock, G. Arehart, N. Bono, R. Boland, B. Hitchcock, T. Boylan, B. Hackenbush, C. Denton.

Complete line of registers, grilles and diffusers for heating or cooling.

LELAND OHIO ELECTRIC CO., 1501 Webster St., Dayton, Ohio — Booths 1160, 1162, 1164

LENNOX INDUSTRIES INC., 200 S. 12th Ave., Marshalltown, Iowa — Booths N-305, N-206, N-208, N-210, N-212, N-214, N-216

Kenneth Behr, Norman Rutgers, Larry Bowers, M. H. Stern, Charles Murchison, Jack Rodgers, Jack Melcher, Edward O'Callahan; Paul Doty, Carl Enerson, Jerry Maixner, Bruce Cook, Harold Yeazel, Lindsay Davidson, Jerry White, Edward Pouillon, Roger Lakey, A. J. Benoit.

OG-4 heavy duty industrial heater, GSD-1 duct heater, 17 ton and 2 ton compressor-condenser units, 17 ton evaporator, 10 ton roof unit, 10 ton up-flo unit (Landmark), OS6-225 oil fired horizontal furnace, apartment house heating and cooling unit, CHP4-503 heat pump with filter box and electric heating; complete display of "Comfort Curtain" schoolroom heating, ventilating and air conditioning equipment.

LENNOX TOOL & MACHINE BUILDERS, 651 N. Baxter St., Lima, Ohio — Booth 1166

W. V. Trask, J. Brenneman.

"Tru-Edge Metlmastr" model TE-100 mobile unit designed for heating and air conditioning sheet metal shops, a low cost multi-purpose machine that affords extreme versatility in cutting or forming sheet metal. Permits moving the contractor's "shop" to the location where work is being performed.

LESLIE WELDING CO., INC., 11241 W. Melrose St., Franklin Park, Ill. — Booth N-544

Carter H. Leslie, Roger D. McCutcheon, J. Robert Orr, Frank Thurston.

Rotary turbine and stationary gravity ventilators in both galvanized steel and aluminum, new directional head gravity ventilator, new "VersaCap" for gas flue venting.

LEWIN-MATHES CO., DIV. of CERRO CORP., 1111 Chouteau Ave., St. Louis 2, Mo. — Booth 434

Rodrick J. Lewin, Jerry Marx, Henry W. Stucke, Robert A. Cook, Jr., Robert Leonard, F. P. Leonard, Don Larson, Don Munroe.

Copper tubing and a miniature drawbench showing how copper tubing is drawn to size.

LIBERTY COMBUSTION CORP., P.O. Box 300, Syracuse 1, N.Y. — Booth N-133

William F. Barry, William H. Moore, Peter J. Geremia, Robert A. Moore, Jack B. Lake.

Gas burners of all types, both conversion burners and burners for OEM on boilers, furnaces, water heaters etc.; burners such as atmospheric inshot and upshot desgin, domestic power, commercial and industrial power, forced draft, slot burners, etc.

LIMA REGISTER CO., 1790 N. Cable Rd., Lima, Ohio — Booth 1168

N. F. Jones, C. B. Armour, J. L. Irvin, C. W. Bell, R. D. Bright, C. W. Gupton, A. F. Jevons, F. Marshall.

Registers, grilles and diffusers — baseboard, sidewall, ceilng, floor, air conditioning.

LITTLE BURNER CO., H. C., 208 Truesdell Ave., La Porte, Ind. — Booth N-342

LOCKFORMER CO., THE, 4615 W. Roosevelt Rd., Chicago 50, Ill. — Booth 837

MAGNETROL, INC., 5300 Belmont Rd., Downers Grove, Ill. — Booth 1036

Stanley Erickson, Richard Haupt, George Saunders, William Cannon, John Freeman, Roy DeMeyer.

Boiler controls, refrigeration control, displacer type controls. Working models of new pneumatic level controller and non-freeze storage tank controller will be featured.

SEE OUR EXHIBIT
FIFTEENTH
INTERNATIONAL HEATING &
AIR-CONDITIONING
EXPOSITION
INTERNATIONAL AMPHITHEATRE, CHICAGO
FEBRUARY 13-16, 1961

MAID-O'-MIST, INC., 3217 N. Pulaski Rd., Chicago 41, Ill. — Booth 346

O. V. Woolley, H. J. Carr, J. A. Madden, J. L. Edgar, K. A. Hanson, J. Wm. Walter, H. T. Waterstraat, Jim McEntee, Joe O'Connor, Bill Hildebrand, Ed Berthet, Lou Rathbun, George Hench, Bill Roben, I. A. Ward, Jr., Harvey Culley, R. C. Schneider, L. E. Pelletier, E. W. Johnson.

"Auto-Vent" air eliminators and balancing valve adapters for hydronic heating and chilled water cooling systems; automatic humidifiers for all types of heating; water level float control valves, saddle valves, needle valves, liquid and air strainers. Complete line of air eliminators for (hydronic) hot water heating and chilled water cooling systems will be featured.

MAJOR CONTROLS CO., P. O. Box 537, Corona, Calif. — Booth 1118

MAMCO CORP., 532-542 Fourth St., Racine, Wisc. — Booth N-221

MAMMOTH INDUSTRIES, INC., 6425 Cambridge Ave., Minneapolis 26, Minn. — Booth 917

Harold J. Collins, Ralph Scheu, James H. Collins, Dean Rupp, C. E. Nelson.

"Compact-Aire" combination heating and cooling, roof top unit; "Compact-Aire" heating only, roof top unit; "Commercial-Aire" direct fired heater; "Compacto" horizontal heater and floor set heaters with bypass and cooling coil compartments; "Compact-Aire" condensing unit. New line of packaged heating and cooling units will be featured, and how cooling coils and bypass systems can be adapted and ordered with standard lines of commercial and industrial heavy duty heaters will be shown.

MAPLEWOOD DIV., ROCKFORD MACHINE TOOL CO., 2500 Kishwaukee St., Rockford, Ill. — Booth N-142

V. J. Marturano, A. T. Thompson, George Borgman, W. Renker, Jack Naill, George Goza.

Complete pipe production line consisting of model G-924 panel snap lock machine, model G-H intermediate feed table, model H-60 air operated roller; air operated model C elbow machine; inexpensive 22 gage Pittsburgh lock machine.

MARATHON ELECTRIC MFG. CORP., Wausau, Wisc. — Booth 1151

MARK & CO., CLAYTON, 1900 Dempster St., Evanston, Ill. — Booth 334

J. C. Lowey, H. D. Gordon, H. D. Agase, Clarence Mark, Jr.

Pumps, fittings, feeders, conduits, couplings, strainers, tubing, valves, water treatment. New line of "Parkerized" forged steel fittings, new bypass valve for air conditioners, heat exchanger, refrigeration and boiler tubing, new high pressure shutoff valve will be featured.

MARKAL CO., 3052 W. Carroll Ave., Chicago 12, Ill. — Booths 237, 239

Dr. L. Aronberg, Donald Lytton, E. J. Reichenbach, Howard Reichenbach, Gus Makel, E. W. Wirthlin, Jr., Clyde Lanham.

Protective coatings, "Paintstiks," "Thermomelt." New "Thermomelt" precision temperature indicators with special holder, and special DA-8 anti-corrosion protective coating for refrigeration parts, will be featured.

MARLEY CO., THE, 222 W. Gregory, Kansas City 14, Mo. — Booths 616, 620

J. A. Cameron, R. J. Powell, L. A. Christensen, F. B. Reed, Don Cousins, A. R. Thompson, J. R. Hedrick, A. D. Talbot, C. A. Smith, J. J. Parker.

Several cooling towers typical of those in the various lines of exhibitor's of packaged water cooling towers; "Dri-Cooler" equipped with exclusive ADB precooler and winter control system; other allied products.

MARLO COIL CO., 7100 S. Grand Ave., St. Louis 11, Mo. — Booth 1215

L. C. Pellegrini, H. R. Iverson, K. W. Wicks, R. H. Seibert, F. G. Meyers, R. J. Cummins, W. H. Frenger, F. E. Ince, J. M. McGiverin.

Newly designed central station multizone air conditioning heating and ventilating unit, eight types of finned coils, three types of fan coil units, stainless steel sprays type dehumidifier. Exhibit will feature a display area and a conference area, with staff engineers and sales engineers available at all times.

MARSH INSTRUMENT CO., DIV. of COLORADO OIL AND GAS CORP., Skokie, Ill. — Booths 639, 641, 643

MASTERCRAFT INDUSTRIES, INC., 109 Lanza Ave., Garfield, N.J. — Booth N-436

Howard Hurwitz.

Industrial vacuum cleaners and parts, "Sootmaster" portable furnace cleaners and tools.

MAXITROL CO., 23555 Telegraph Rd., Southfield, Mich. — Booths 916, 920

Frank Kern, Jr., Charles Stang, Jr., Don L. Zorn, Robert T. Hlavin, Del V. Krieger, James L. Potter, Wesley H. Blaylock, Eliott C. Mally, Herbert J. Schlacter, Macit Gurol.

"Selectra" system of electronic modulation, available in different models for use on residential furnaces, gravity and forced air; hot water systems for residential purposes; probe adapted units for use in make-up air systems. Gas pressure regulators, featuring "straight-through-flow" design, available in 4 in. pipe size for first time and manufactured in cast iron rather than aluminum and with connections flanged. "Selectra" modulating system will be demonstrated in operation on actual flames in gas fired furnaces.

McDONNELL & MILLER, INC., 3500 N. Spaulding Ave., Chicago 18, Ill. — Booth 1000

E. N. McDonnell, Nils Swanson, George LaRoi, John James, Bill Gleeson, Jim Platt, Gene Mitchell, John Thvedt, Charles Bottger, Dick Flickinger, Bob Nelson, Everett Stolnack, Jim Ramsay, Dick Berry, Howard Peary, Jack McCune.

Boiler safety devices, including boiler feeders, low water fuel cutoffs, pump controllers, relief valves, and related equipment, including new series of flow switches. Practically every popular product of line will be shown in the form of cut-away models.

McGRAW-EDISON CO., ALBION DIV., 704 N. Clark, Albion, Mich. — Booths 335, 337

McINTIRE CO., THE, Okner Pkwy., Livingston, N.J. — Booth 317

M. J. Meiklejohn, J. G. Beierlein, E. S. Chatlos.

Driers, filters, strainers, moisture indicators, accessories for refrigeration and air conditioning. New M line of filter-driers and new moisture liquid indicator will be featured.

McLARTY SYSTEMS, 2600 Dickman Rd., Battle Creek, Mich. — Booth N-135

Gordon McLarty, Thora H. McLarty, Douglas E. Potter.

Ten models of booster fans for draft, warm or cold air, low cost fan switch, personal fans. All models will be operative to show quietness, balance, capacity.

McQUAY INC., 1600 Broadway N.E., Minneapolis 13, Minn. — Booth 802

W. Peterson, G. Workinger, B. E. James, R. E. Sorenson, R. D. Kemper, A. R. Flynn, D. Seitz, D. Hofschulte, R. Young, D. Wallin, K. Schlund, D. Schmid, J. R. Resch, J. Moga, Jr., W. Butcher, P. Lewis, E. Buetemeister.

New single zone and multi-zone air conditioners; new vertical air flow "Aircon" air cooled condenser with face dampers; horizontal, downflow, and cabinet unit heaters; new direct drive and belt driven air conditioners to 10 ton capacity; remote room conditioners, hideaway and floor types; apartment air conditioners for closet or utility room installation, new removable header water coil, new pitched in the casing steam coil, other new coils.

McQUAY-NORRIS MFG. CO., 2320 Marconi Ave., St. Louis 10, Mo. — Booth N-316

MECHANICAL CONTRACTORS CO. — see IMPERIAL DAMPER CO.

MEIER ELECTRIC & MACHINE CO., INC., 3525 E. Washington St., Indianapolis 7, Ind. — Booth 44

MERCOID CORP., THE, 4201 Belmont Ave., Chicago 41, Ill. — Booth 35

J. F. Chambliss, W. E. Jones, W. L. Colterjohn, P. J. Provost, P. O. Sloss, W. Stein, L. Kennedy, R. Folds, W. Lischett, E. Petray.

Automatic controls — pressure, temperature, liquid level; new line voltage thermostat; new plunger type mercury relay.

METALBESTOS, WILLIAM WALLACE CO., 1475 Old County Rd., Belmont, Calif. — Booth 409

Frank Kohles, R. A. McHugh, Don Disotell, Dave Brazell, Bill Blalock.

Chimney and gas vent pipe and fittings. New chimney housings which are sufficiently flexible to allow for 62 different combinations, new offset chimney pieces and entirely new and original conception in building-galvanized chimney design will be featured.

METALS & CONTROLS, A DIV. of TEXAS INSTRUMENTS INC., 34 Forest St., Attleboro, Mass. — Booth 43

MID-CONTINENT METAL PRODUCTS CO., 1960 N. Clybourn Ave., Chicago 14, Ill. — Booth 1116

MIDLAND-ROSS CORP. — see JANITROL HEATING & AIR CONDITIONING DIV.

MILWAUKEE ELECTRIC TOOL CORP., 5316 W. State St., Milwaukee 21, Wisc. — Booth 1158

L. Morand, P. Wing, M. E. Halversen.

Heavy duty portable electric tools used in heating, air conditioning and piping field, including "Vac-U-Rigs," "Dymobits" for diamond bit drilling. "Vac-U-Rig" and "Dymobit" drilling demonstration will be featured.

MILWAUKEE VALVE CO., INC., 2375 S. Burrell, Milwaukee 7, Wisc. — Booth 227

Herschel L. Seder, Thomas H. Kleppe, Max Koenigsberg, Walter Ellingboe, Gene Zaleski.

Complete line of radiator and convector valves, circulators, balancing valves and fittings, supply and return manifolds, plus many new commercial and industrial valves. New line of "Multi-Just" radiant heat supply and return manifolds, new industrial union bonnet gate valve, and new line of radiator and convector valves for forced and gravity circulation will be featured.

MINE SAFETY APPLIANCES CO., 201 N. Braddock Ave., Pittsburgh 8, Pa. — Booth 147

H. C. Elinsky, J. P. Sherwin, J. G. Donohue, R. W. Swanson, R. B. Evans.

MSA "Ultra" filters, "Dustfoe" filters, "Air-O-Kay" filters, catalytic filters, instruments.

MINNEAPOLIS-HONEYWELL REGULATOR CO., 2733 4th Ave., S., Minneapolis 8, Minn. — Booths 965, 969

Commercial Div.: John E. Haines, Ralph Crysler, W. T. Gove, E. J. Roach, R. H. Jacobs, C. M. Sanders, Robert Hall, V. D. Wissmiller. Residential Div.: K. L. Wilson, K. W. Schick, T. S. Carley, S. J. Nelson, Paul Felt, J. P. Kriechbaum, H. O. Chamberlain, C. C. Cochran, R. H. Keppel, Leo McRoberts, S. J. Toth, R. M. Locke, T. A. Reed, H. W. Snyder.

Commercial Div.: "Selectographic" and "Supervisory DataCenters" for temperature control, scanning, programming, security and surveillance; complete line of pneumatic valves, thermostats and motors; electric, electronic and pneumatic thermostats; revolutionary fluid power radiator valve; smoke and fire alarms; electronic fence and physical intrusion detection systems. Residential Div.: Zone controls for warm air, hydronic and electric heating systems; water heater controls; air conditioning control panels; low capacity gas valves with six operating heads; flame safeguard burner control, and just-introduced residential electronic air cleaner. New fluid power valve, security system that uses an electronic fence, and the brand-new residential electronic air cleaner are three highlights.

MISSILE DYNAMICS CORP. — see AIR MOTION RESEARCH DIV.

MODERN FLO-TROL PRODUCTS CORP., 367 Farmingdale Rd., Babylon, N.Y. — Booths 741, 743

Mortimer R. Reiss, Robert J. Seyler, Stephen M. Reiss, representatives from various areas.

Hydronics heating specialties, including circulator pumps, flow valves, zone valves, dual units, reducing valves, purge valves, manifolds, various types of diversion fittings. Working model of three zone hydronic heat system, with thermostatically controlled opening and closing "Zonar" valves and miniature spinning circulator pump will be featured.

MODINE MFG. CO., 1500 DeKoven, Racine, Wisc. — Booth 632

W. R. McMahon, R. L. Hagensick, J. C. Lutter, C. C. Wilson, L. Glascock, A. L. Junion, M. J. Druse.

Fan coil air conditioners; cabinet unit heaters; schoolroom unit for heating, ventilating, cooling. All products displayed will be shown to the public for the first time.

MONARCH MFG. WORKS, INC., 2501 E. Ontario St., Philadelphia 34, Pa. — Booth 1050

E. B. Frame, C. E. Fink, W. H. Hulick, J. C. Underwood.

Oil burner nozzles and accessories such as air mixing equipment, combustion heads, regulating valves, line strainers, and service tools; industrial spray nozzles and accessories for air washers, cooling towers, gas scrubbing and other industry applications using water and other liquids.

MONOGRAM INDUSTRIES, INC., 825 S. Front St., Quincy, Ill. — Booth 146

Herman D. Tow, K. W. Fischer, Wm. J. Long, Paul G. Fiock, Robert Egan, Fred P. Newby, Chas. F. Bahr, LeRoy Smith, Henry L. Hudson.

Forced air furnaces, oil and gas hi-boy and lo-boy models; recessed furnaces and wall heaters, oil and gas models; special builder model, counterflow model plus air conditioning. A new counterflow model requiring only 10x14 floor space, yet with 65,000 Btu input, will be featured.

MOORE & CO., SAMUEL — see DEKORON PRODUCTS DIV.

MORRISON PRODUCTS, INC., 16816 Waterloo Rd., Cleveland 10, Ohio — Booth 554

MT. HAWLEY MFG. CO., 1209 W. Alta Rd., Peoria, Ill. — Booth N-235

R. E. Wiesner, A. H. Hudson, H. R. Thayer.

Gas fired residential steel boiler, oil fired residential steel boiler. Competitively priced residential boilers with newly designed heat exchanger which gives maximum efficiency coupled with low draft loss will be featured.

MUELLER BRASS CO., 1925 Lapeer Ave., Port Huron, Mich. — Booths 845, 849

V. A. Bower, L. L. Parker, O. R. Payton, R. A. Gray, Scott Woolford, C. T. Nelson, W. W. West, Wayland Swanson, T. E. Rickelman.

"Streamline" wrought copper fittings 1/8 through 6 1/8 in. OD, "Streamline" copper water tube, dehydrated and A.C.R. copper tube, formed tube coils, water valves, heating specialties and "Masterline" refrigeration and air conditioning valves, filter driers, liquid and liquid-moisture indicators. Exhibit will be comprised of complete five hole miniature golf course where visitors can try their skill.

MUELLER CLIMATROL DIV. of WORTHINGTON CORP., 2005 W. Oklahoma Ave., Milwaukee 1, Wisc. — Booths 1055, 1059

R. B. Schmidt, W. S. Sutherland, J. Beck, L. Winter.

Completely new electric heating line, new lines of gas and oil fired furnaces and boilers, new condensing units, new electric humidifier.

MULTI-VENT DIV., THE PYLE-NATIONAL CO., 1334 N. Kostner Ave., Chicago 51, Ill. — Booth 566

C. W. Hammond, J. E. Youngblood, Z. Prane, R. Meyer.

Modular, linear and unitary air diffusers and combination air diffusing and fluorescent lighting troffers.

NATIONAL HEATER CO., INC., 2475 Doswell Ave., St. Paul 8, Minn. — Booth 1250

E. M. Delaney, Geo. T. Costello, R. J. Crouse, J. E. Ruka, P. J. Dreher, R. J. Darragh.

Regular TD indirect fired heater line; new "Champion" MA direct fired heaters for make-up air application, 8000 to 150,000 cfm, with DWDI fans for operation against static pressure, cabinets weathertight for inside or outside installations, units universally adaptable to any discharge direction (horizontal, vertical or straight through.) Special "in line burners" for MA units will be displayed.

NATIONAL UNION ELECTRIC CORP. — see ARMSTRONG FURNACE CO. DIV.

NATIONAL UNION ELECTRIC CORP., WILLIAMS-OIL-O-MATIC HEATING CO. DIV., 851 W. 3rd Ave., Columbus 8, Ohio — Booth 550

NATIONAL-U.S. — see CRANE CO.

NEEDCO — see GENERAL THERMOELECTRIC CORP.

NELSON PRODUCTS, HERMAN, AMERICAN AIR FILTER CO., INC., Louisville 8, Ky. — Booth 40

NEW YORK AIR BRAKE CO., THE — see AURORA PUMP DIV.

NEW YORK BLOWER CO., THE, 32nd and Shields Ave., Chicago 16, Ill. — Booth 816

NIAGARA FURNACE DIV., THE FOREST CITY FOUNDRIES CO., 2500 W. 27th St., Cleveland 13, Ohio — Booth N-506

Ralph G. Strangward, Irving E. Seith, Robert W. Fritz, George Cahlik.

Gas and oil warm air furnaces in basement, hiboy, and downflow models. New improved gas units with completely cast iron heat exchanger will be featured.

NIAGARA MACHINE & TOOL WORKS, 637-697 Northland Ave., Buffalo 11, N.Y. — Booths 817, 821

OCTAGON VENTILATOR MFG. CO., P.O. Box 1127, Jackson, Tenn. — Booth N-432

Harold G. Knutson, Harold Knutson, Harold Triebe, Harold Lindgren.

Complete line of gravity, power and continuous roof ventilators. Prefabricated curbs, both thermal and acoustical lined, and special wall exhausters will be featured.

OHIO ELECTRIC MFG. CO., 5400 Dunham Rd., Maple Heights, Ohio — Booths 1160, 1162, 1164

OIL EQUIPMENT MFG. CORP., 169 Derby Ave., New Haven, Conn. — Booth N-417

Arnold J. Alderman, Sidney J. Horton.

King tank gauges and fill alarms, various tank accessories as fill caps, vent caps, duplex bushings. Also, stainless steel combustion chambers and baffles.

OLSEN MFG. CO., THE, C. A., Elyria, Ohio — Booth 41

Edward P. Hayes, Ronald W. Lindsay, James S. Garber, C. L. Grandstaff, E. G. Swain, E. H. Morris, T. J. Gorman, E. H. Welton, J. M. Beck, T. F. Chatwood.

Samples representative of complete "Luxaire" line of gas, oil and electric winter air conditioners; air and water cooled summer air conditioners; combination year 'round air conditioners; gas fired unit heaters; gas conversion burners; gas disposer units. New products include 2 and 3 hp air cooled, self-contained summer air conditioners; electric air conditioning furnaces; oil fired winter aid conditioners with high air handling capacities; odorless, smokeless gas fired disposer units.

OMARK INDUSTRIES, INC., 9701 S. E. McLoughlin Blvd., Portland 22, Ore. — Booths 108, 110

ORR & SEMBOWER, INC., Morgantown Rd., Reading, Pa. — Booth 207

F. H. Klein, R. C. Currie, L. A. Roethe, P. B. Seasholtz, J. M. Dunworth, P. E. O'Hora.

Packaged fire tube boilers. New model "Powermaster", special hot water boiler design will be featured.

OSTER MFG. CO., THE, 1340 E. 289th St., Wickliffe, Ohio — Booth 1233

Allan MacKenzie, R. C. Chambers, J. H. Williamson, L. S. Newman, R. C. Baumgartner.

Pipe and bolt threading equipment. New line of sewer and drain cleaning equipment will be featured.

OWENS-CORNING FIBERGLAS CORP., Toledo 1, Ohio — Booth 654

PACIFIC BOILER DIV. — see CRANE CO.

PARAGON ELECTRIC CO., 1600 12th St., Two Rivers, Wisc. — Booth 757

George J. Platt, R. W. Eldred, J. J. Everard, F. T. Hanson, Howard M. Buchholz, R. V. Mitchell, Tom Morrison, John H. Otis, S. L. Hartinger, Dwaine O. Johnson, William C. Leff.

Refrigeration, commercial and industrial time controls. Four-pole time controls, seven day dial, 24 hr dial, "Astro" dial. New design line of refrigeration time controls "D-Frost-O-Matic", new portable air conditioner control, full 1 hp rating, all units fully UL approved.

PARKER BOILER MFG. CO., INC., 2035 E. 37th St., Los Angeles 58, Calif. — Booth N-225

Douglas W. Anderson, Sid E. Danenhauer, Fred L. Kuhn, Frank M. Koscielski.

Hot water boiler designed for closed system space heating standardly designed for operating temperature up to 350 F; indirect hot water boiler to provide rust-free domestic hot water.

PEERLESS OF AMERICA, INC., 5800 N. Pulaski Rd., Chicago 46, Ill. — Booth 1141

R. W. Kritzer, J. M. O'Connor, M. W. Knight, L. F. Cora, S. F. Pasternak.

Air conditioning, heating and refrigeration finned coils, unit coolers, air cooled condensers, steel condensers, water chillers. New type fin coil of special patented design which is incorporated in heating and air conditioning coils as well as air cooled condensers will be featured.

PEERLESS CORP. and ROUND OAK DIV., PEERLESS CORP., 1853 Ludlow Ave., Indianapolis, Ind. — Booth 8

O. V. Mutz, Harold Mutz, R. C. Whallon, T. Z. Clifford, N. F. Hummel.

Complete line of oil, gas fired furnaces; remote central air conditioners; remote central heat pumps; self-contained heat pumps; "Master Fit" pipe and fittings; and featuring electric furnace.

PEERLESS ELECTRIC DIV., H. K. PORTER CO., INC., 1401 W. Market St., Warren, Ohio — Booth 206

Walter A. Curtis, William M. Gelvin, Robert E. Lininger, Howard K. King, Richard L. O'Brien, John T. Horner, Lars E. Schulein, Charles R. Atkinson, Russell Lindgren.

"Power Fixed" blower, propeller fans, utility sets, direct drive units, centrifugal roof ventilator. Airfoil blower will be featured.

PEERLESS HEATER CO., THE, Spring and Schaeffer, Boyertown, Pa. — Booths 1072, 1073

I. J. Scheckter, Ray G. Pinkerton, Robert K. Ganster, H. L. Hobert, H. G. Miller, Roy Koplin, Eugene Fish, H. B. Aldrich, D. Wooden, E. W. Wilson, Frank Sieffert.

Gas fired cast iron boilers, 75,000 to 6,120,000 Btu input; oil fired cast iron residential boilers; gas and oil fired warm air furnaces, 72,000 to 150,000 Btu output. New 170 series gas fired boiler and new 170 nine section cutaway unit will be featured.

PEERLESS MFG. DIV. of DOVER CORP., 1400 W. Ormsby Ave., Louisville 10, Ky. — Booth 243

PEERLESS PUMP, HYDRODYNAMICS DIV., FOOD MACHINERY AND CHEMICAL CORP., 301 W. Ave. 26, Los Angeles 31, Calif. — Booth 1272

N. C. Olson, C. L. Nickel, W. T. Harman, J. M. Nolan, D. Nommenson, J. W. Morris, F. E. Chapman, S. M. Riordan, E. W. Lundy.

Horizontal and vertical pumps for water supply, building trades, air conditioning and hydronic systems. Demonstration of low-noise-level pumps will be featured.

PELNA ENGINEERING CORP., Box 8242, Philadelphia 4, Pa. — Booth N-426

Abe Scheinfeld, Howard Rigberg, Frank J. Hickey, Meyer Bressen, Franklyn Sklar, Bernard Magiday, H. Michelman, Richard Halberg.

Plug-in, thermostatically controlled electric domestic type warm air humidifier. Live exhibit demonstrating humidifier activated and operating under actual conditions will be featured.

PENN CONTROLS, INC., 1302 E. Monroe, Goshen, Ind. — Booths N-234, N-236, N-238

H. M. Carnahan, P. O. Penn, K. W. Cash, F. W. Fessler, J. F. Kinney, D. F. Hanson, K. L. Lamm, R. H. Luscombe, Carlos Morgan, C. P. Pestow, A. J. Walter.

Full line of automatic controls for heating, air conditioning, refrigeration, industrial and general purpose applications. New line of on-off, floating and proportional controls and motor actuators for controlling air handling dampers and motor actuated valves will be featured.

PENN VENTILATOR CO. INC., Goodman St. above Allegheny Ave., Philadelphia 40, Pa. — Booth 338

Louis G. Malissa, Robert Silver, Barney P. Lipton, Paul S. Orkline, William Silver, Carl J. Pastura, Herman Kramer, Carl A. Malissa.

"Domex" centrifugal roof exhauster, extruded aluminum "Sonotrol" curb, extruded aluminum "Pennhouse" with centrifugal fan, "Omega" gravity ventilator, fiber glass "Domette." Miniature models of roof ventilators will be on display — "Pul-Air" ridge gravity unit, "Pyroport" fire vent, "Litex" gravity ventilator, "LC Dynafan."

PENNSALT CHEMICALS CORP., ISOTRON DIV., 3 Penn Center, Philadelphia 2, Pa. — Booths 209, 211

PENNSYLVANIA FURNACE & IRON CO., Pine at Fourth, Warren, Pa. — Booths 128, 130

PERFECTION DIV., HUPP CORP., 1135 Ivanhoe Rd., Cleveland 10, Ohio — Booth 1002

C. W. Millsom, Phil Gauthier, Al Schnur, Fred Greer, Len Sands.

2 to 5 ton heat pumps, 3 to 5 ton air conditioners, "Regulaire" gas and oil furnaces, "Classic" wall heaters, "Spacemaker" thru-the-wall heater, new "Zoneaire" control for heating-cooling. Exhibit will comprise a new dramatic display to show complete line.

PERMAGLAS DIV. — see A. O. SMITH CORP.

PERMALIFE GLASS FIBER DIV. STANDARD ELECTRIC CO., 3016 Austin Highway, San Antonio 9, Texas — Booth N-141

Robert P. Garwood.

Spun fiber glass air filter media, processed in such a manner that its density is progressive so that a mat is formed on air exit side; available in varying thicknesses and widths by 100 ft long.

PEROLIN CO., INC., THE, 1112 W. 37th St., Chicago 9, Ill. — Booth 518

H. R. Strong, W. H. Carls, S. J. Woznicki, Paul E. Stein, Jr., Mort Mollner, C. L. Mead, W. F. Arndt, Michael Senetsky.

"Formet" water system treatment, "diamond blue" crystals 321. Large revolving "jewel" table showing water system treatment crystals in various sizes will be featured.

PETRO DIV. of IRON FIREMAN MFG. CO., 3170 W. 106th St., Cleveland 11, Ohio — Booth 325

Jess R. Crews, Bill Hegan, Charles Bailey, George Martinik, Bob Snyder.

PPF package unit; P240 burner, PB fanned draft burner.

PIONEER PRODUCTS DIV., WITCO CHEMICAL CO., INC., 122 E. 42nd St., New York 17, N.Y. — Booth N-114

Clarence Bobbe, Donald Eckberg, Louis Goldberg, Robert J. Kufrin, John Raggio, E. H. Schwarze, Edward Sokol, G. T. Catherines.

Underground pipe insulation; No. 820 cork and bituminous base insulation; No. 1008 insulation and protective coating; sealers for heating and air conditioning; sound deadeners.

PITTSBURGH CORNING CORP., 1 Gateway Center, Pittsburgh 22, Pa. — Booth N-128

E. A. Spardy, R. E. Fuhs, J. H. Coleman.

"Foamglas" insulation for industrial piping and equipment, "Foamglas Stay-Dry" insulation for hot and cold piping.

PITTSBURGH PLATE GLASS CO., Fiber Glass Div., 632 Fort Duquesne Blvd., Pittsburgh 22, Pa. — Booth 125

PLUMBING-HEATING-AIR CONDITIONING WHOLESALER, THE, 92 Martling Ave., Tarrytown, N. Y. — Booth 731

Publication.

PLUMBING AND HEATING BUSINESS, 144 E. 44th St., New York 17, N. Y. — Booth 1066

Publication.

PORT CITY MACHINE & TOOL CO., 3590 Airline Rd., Muskegon, Mich. — Booth N-420

Carl A. Johnson, Jr.

"Mipatan" Pittsburgh lock electric seaming hammer for making duct fittings. M-2 head for seaming 20 ga sheet metal, interchangeable with standard 24 ga head, will be featured.

PORTER CO., INC., H. K. — see PEERLESS ELECTRIC DIV.

POWER FLAME DIV., INC., SIEMON MFG. CO., 1203 Main St., Grandview, Mo. — Booths 1120, 1122

POWER LINE FAN CO., 639 South Ave., Plainfield, N.J. — Booth 637

Albert E. Ott, Alan D. Cree, E. W. Lohman.

Centrifugal and axial roof exhausters (spun aluminum); propeller fans for both high and low pressure applications; vertical discharge roof ventilators; penthouse ventilator. New low silhouette axial roof exhausters; new low silhouette, low tip speed spun aluminum centrifugal roof exhausters will be featured.

POWERS REGULATOR CO., THE, 3400 W. Oakton St., Skokie, Ill. — Booths, 872, 873

G. M. Cox, G. E. Fickett, C. A. Gustafson, D. Ladd, D. A. MacWatt, H. C. Mueller, E. J. O'Donnell, T. J. Smith, R. M. Spencer, K. M. Stevens, D. A. Stott, E. K. Wagner, J. R. Wilson.

"Graph-O-Matic" panel; control instruments for heating, ventilating and air conditioning; pneumatic tube system; security alarms; shower room controls. "Graph-O-Matic" panel custom designed to meet requirements of centralized control for a modern building will be featured. Panel completely operative, includes graphic diagrams of air conditioning system, monitoring and control of building temperature and security alarm system for protection against vandalism, break-in and unauthorized presence.

PUROLATOR PRODUCTS, INC., 970 New Brunswick Ave., Rahway, N.J. — Booth 117

William Baldauf, F. R. Pearsall, Thomas E. Morton.

Oil burner filters and refills.

PYLE-NATIONAL CO., THE, — see MULTI-VENT DIV.

QUICKDRAFT CORP., THE, Canton, Ohio — Booth 443

RBM CONTROLS DIV., ESSEX WIRE CORP., 131 Godfrey, Logansport, Ind. — Booth 1156

V. A. Hedlund, W. T. Hopkins, R. L. Dashner, P. C. Talmadge.

Series and potential motor starting relays, air conditioning and heating a-c contractors, general purpose relays, enclosed single multiple switching relays, midget sensitive relays, thermal delay controls, thermostat controls. 25 amp contactor, new special purpose design low cost refrigeration a-c thermostat, new high current contactors will be featured.

RAMSET FASTENING SYSTEM, 289 Winchester Ave., New Haven 4, Conn. — Booth 220

Hank Benedict, John Nassit, John Schwaller, Hank Walesch, Clyde Kanz, Bob Henning, Jack Parsons.

"Duo-Jobmaster" fastening tool, "Shure-Set" hammer-in fastening tool, "Shure-Drive" floating action hammer. New model R-550 "Shure-Set" craftsmen's kit will be featured.

RANCO INC., 601 W. Fifth Ave., Columbus 1, Ohio — Booth 855

J. H. Manecke, J. E. Kumler, W. H. Stanley, R. G. Raney, R. E. Kraft, C. J. Hasbrock, C. M. Speilman.

Voltage starting relays for motors for equipment requiring high starting torque, thin model cycling temperature controls with side access terminals, compact humidistat which operates humidifiers or dehumidifiers on change of relative humidity. Center display will have panels with animated schematics of voltage starting relay and humidistat.

RANDALL GRAPHITE BEARINGS, INC., Greenlawn & Lake Sts., Lima, Ohio — Booth 1007

Ray Chaney, Kenneth C. Harrod, Charles Esch, J. C. Van Buskirk.

Bronze bushings, graphited bronze bushings, pillow blocks, flange units, bearing assemblies, cored and solid bars, standard bronze bushings.

RAY OIL BURNER CO. — see WEBCO BOILER DIV.

RAYPAK CO., INC., 2231 Chico Ave., El Monte, Calif. — Booth N-425

A. Whittell, Jr., Richard M. Norton.

Copper tube hot water boilers and instantaneous volume water heaters.

READY POWER CO., THE, 11231 Freud Ave., Detroit 14, Mich. — Booth 633.

REED UNIT FANS, INC., 501 N. Saint Patrick, New Orleans 19, La. — Booth 216

Harold B. Patterson, Mac C. Mallary.

Axial flow air moving equipment, including propeller exhaust fans, belt and direct drive tubeaxial fans, power roof ventilators.

REFRIGERATION & AIR CONDITIONING BUSINESS, THE, 812 Huron Rd., Cleveland 15, Ohio — Booth 1008

Publication.

REFRIGERATION RESEARCH, 525 N. 5th St., Brighton, Mich. — Booth N-306

E. W. Bottum, C. A. Powers, J. Sobieski, F. Rockwell, E. H. Wietzke.

Receivers, accumulator-driers, accumulators, strainers, manifolds, receiver-driers, mufflers, driers, heat exchangers, suction accumulators, capillary strainer assemblies, capillary strainer-drier assemblies.

REPUBLIC PRODUCTS CO., 7426 State Rd., Philadelphia 36, Pa. — Booth 414

RESEARCH PRODUCTS CORP., 1015 E. Washington Ave., Madison, Wisc. — Booth 1017

H. E. Whelpley, Duane B. Becker, Frank A. Sours, Gene La Marre, J. E. Walz, J. P. Donnelly, John G. Schutz, Ernell F. Rothe, A. W. Brown, Carl B. Rowe, Dale O. Bender.

"Aprilaire" humidifier, "E Z Kleen" air filters, industrial filters, grease filters, trim-to-size "E Z Kleen" air filters, "Super" filter coat.

REVCOR, INC., 251 Edwards St., Carpentersville, Ill. — Booth 1068.

C. O. Wilson, Walter Claffey, D. N. Tangman, J. F. Kochevar, J. H. Reichwein.

Blower wheels, propeller fans, housings, inlet rings. Exhibit will emphasize furnace wheels and double inlet wheels.

RHEEM MFG. CO., 7600 S. Kedzie Ave., Chicago 52, Ill. — Booths 662, 666

W. P. Lorentz, J. B. Meyer, P. J. Fetzek, R. C. Shelton, Randy Nichols, R. B. Gilbert, R. C. Anderson, C. F. Zauner, L. W. Stitt, C. E. Callahan, F. Peters, Geo. Langenberg, Fletcher Lewis, R. J. Pierson.

Warm air furnace, steam and hot water boilers, air conditioners, commercial water heaters. New "Piggyback" air conditioner and electric warm air furnaces will be featured.

A diagram of the exhibit hall, showing the booth locations, appears on pages 214-215.

Additional exhibitor booth numbers are shown on page 228.

RIC-WIL INC., 24 Brown St., Barberton, Ohio — Booth 516

R. D. Ashman, Jr., E. R. Hall, C. G. Van Schoor, E. S. Pandy, G. M. Tonathy.

Prefabricated insulated piping systems for steam, hot water, oil, other fluids. Two new systems for overhead and underground piping, new "Plasticlad" prefabricated system for overhead distribution, new "Plasticlad" system for underground distribution, highly resistant to acids, alkalies, and salts, will be featured.

RIDGE TOOL CO., THE, Elyria, Ohio — Booths 636, 640

W. L. Parcell, R. D. Fye, H. L. Palmer, Carl Petersen, Walter Miller, L. C. Richardson, Clark Milnickel, Milo Sharp, Gerald Given, David Friend.

Complete line of "Ridgid Work-Saver" pipe tools, both hand and power, including new flaring tools, tubing cutters and accessories for the 300 and new 200 power drives. Tools, and equipment will be demonstrated by salesmen who can discuss any tool problems visitors may have.

ROBERTS-GORDON APPLIANCE CORP., 44 Central Ave., Buffalo 6, N.Y. — Booth 1231

Robert I. Warnecke, Henry K. Straw, William L. Wright, Robert T. Huyck, Robert J. Keller, Ronald Eno, Peter Barbera.

Feature of exhibit will be "Ray-Vac" system, in operation if possible, a unique single "safety-sealed" gas-fired system that can provide all the heating needs of homes, and commercial and institutional establishments. System combines vacuum combustion, radiant or convective heat output in a device which uses the vacuum to directly actuate flow of gas and air. Units can be connected in tandem, with output of one unit feeding into input of next one downstream, which permits extension of heating surface, as baseboard radiation for instance; with all sections connected in series and only the final outlet connected to the exhaust system. Since each combustion unit totally premixes fuel and air, and can be adjusted to tolerate exhaust products in the gas-air mixture, the units can be operated singly or in series groups.

ROBERTSHAW - FULTON CONTROLS CO., FULTON SYLPHON DIV., P. O. Box 400, Knoxville 1, Tenn. — Booths 228, 230

G. L. Ogdin, L. S. Dysart.

Temperature and pressure regulators, control valves.

ROBERTSHAW-FULTON CONTROLS CO. — also see GRAYSON CONTROLS DIV.

ROBERTSON CO., H. H. 2400 Farmers' Bank Bldg., Pittsburgh 22, Pa. — Booth 301

Donald G. Havlish, Andrew (Bud) H. Sawyer, E. Everett Pierce, Jr., Douglas G. Aldrich, Andrew R. Ewing, Jr., Robert M. Strodgell, Kenneth R. Cox, Lawrence E. Morier, Jr., John L. Wismar, David W. Collette, James L. Griffith, James G. Jacobs.

Secondary distribution system for high pressure dual duct air conditioning utilizing air cells in cellular steel floor and specially designed mixing boxes at sill, in the ceiling or under the floor.

ROBINAIR MFG. CORP., 1224 S. East Ave., Montpelier, Ohio — Booth N-233

R. W. Bishop, W. E. Moore, H. A. Boyce, R. L. Steiner.

"Dial-a-Charge" charging cylinders, vacuum pumps, pinch-off tools, process tube adapter sets, tubing cutters, "Robbi" tube connectors, test cords. "Dial-a-Charge" cylinders with heating element to permit creating a pressure prior to charging system, and tubing cutter with new feature designed to permit work in confined areas will be featured.

ROCKFORD MACHINE TOOL CO. — see MAPLEWOOD DIV.

ROTHERM ENGINEERING CO. INC., 7280 Devon Ave., Chicago 31, Ill. — Booth 745

H. S. Kuhn, R. B. Borucki, Geo. Reed.

Revolving joints, expansion joints, humidifiers, fiber glass air nozzles. An entirely new design in humidifiers that introduces steam into a room at room temperature will be featured.

ROTHERM ENGINEERING CO., INC. — see BOYLE ENGINEERING LABORATORY DIV.

ROUND OAK DIV. — see PEERLESS CORP.

ROYAL MFG. CO., 622 Washington Sq. Bldg., Royal Oak, Mich. — Booth N-437

Territorial representatives.

"Moist-Aire" humidifier. A furnace demonstrator which shows several types of installations in action, the water action being easily seen, will be featured.

RUBATEX, DIV. of GREAT AMERICAN INDUSTRIES, INC., Bedford, Va. — Booth N-209

C. R. Thaxton, C. E. Hudson, Jr., W. M. Witt.

Closed cell tubing and pipe insulation, closed cell extrusions, wrap-on insulation, sheet insulation, hardboard insulation.

S. O. S. PRODUCTS CO. INC., 346 Cumberland, Brooklyn 38, N.Y. — Booth N-125

I. S. Pryor, G. G. French, Vogel & Associates, Carasick & Shaw, L. J. Goldstein, J. Gittler, Geo. Gulden, Dick Hill, Chas. Gersin, Eichel & Co.

Chemical and refractory products.

SAFEGUARD CORP., Lansdale, Pa. — Booth N-107

SARCO CO., INC. — SARCOTHERM CONTROLS, INC., 635 Madison Ave., New York 22, N.Y. — Booth 615

L. Barfus, H. L. Simmons, A. Milnes, T. R. Stevens, R. L. Stewart, C. A. Stauber, B. Rosenburg, C. E. Brakenridge, S. Nejman, F. Majchrowicz, W. H. Simpson, R. Wehr.

Complete line of temperature controls, steam traps and heating specialties, including new unit heater control, new zone valve, new room thermostat. Sound animated exhibit of operation of thermodynamic steam trap type TD-50 will be featured.

SARCOTHERM CONTROLS, INC. — see SARCO CO., INC.

SCHEMENAUER MFG. CO., Kittle Rd., Holland, Ohio — Booths 1263, 1265, 1267

H. L. Schemenauer, E. C. Liebrecht, James Eichorst, C. F. Wachter, J. R. Miller, C. W. Lugar.

Classroom unit ventilators and bookshelf storage cabinets, commercial radiation and finned tube products. New series 60 unit ventilators and cabinets offer latest concepts in design, with emphasis on color and styling.

SCHNACKE, INC., 1107 N. Governor, Evansville 7, Ind. — Booth 975

F. C. Schnacke, M. J. Barnett, C. L. Lankford, Richard Toll.

Photographic views of compressor units, condensing units, 5-75 hp; package liquid chillers, 10-300 hp. New hermetic chiller, 7½ to 30 hp, will be featured.

SEABOARD PRODUCTS CORP., 191 Frelinghuysen Ave., Newark, N.J. — Booth N-237

Robert M. Kenny, John J. Kenny, John J. Murray, Kenneth Kruse, John Farrell.

Electric heating products, both industrial and residential; baseboard heaters, wall insert heater, in-floor heaters, quartz-ray heaters, desk heaters, thermostats, input controllers. Desk heater and quartz-ray heater, which has varied applications in commercial and industrial field, will be featured.

SEALMASTER DIV., STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill. — Booth 133

George Marsh, Phil Hurd, Richard Glavan, Melvin Walsh.

Ball bearing units and "Spherco" spherical rod ends.

SENNA MFG. CO., 732 N. Napa, Spokane 24, Wash. — Booth N-545

Ewing R. Halsey, Sam Halsey, Ed Senna.

Electric pipe bending equipment, electric tube bending equipment.

SHAW-PERKINS MFG. CO., 201 E. Carson St., Pittsburgh 19, Pa. — Booths N-113, N-115

F. N. McConnell, E. C. Davies.

Front air outlet and top air outlet "PanelVectors," baseboard "PanelVectors," institutional "PanelVectors," high temperature water "PanelVectors," ceiling or wall mounted "AiRadiators." The high temperature water units will be featured.

SHENANGO REFRACTORIES, Box 120, New Castle, Pa. — Booth N-412

SIEMON MFG. CO., POWER FLAME DIV., INC., 1203 Main St., Grandview, Mo. — Booths 1120, 1122

SILVERCOTE PRODUCTS, INC., 161 E. Erie St., Chicago 11, Ill. — Booth N-428

Richard K. Trask, Fred C. Dalley, Robert C. Elder, Frank F. Becker, Richard M. Brown.

"Silvercel" and "Fine Fiber" fiber glass duct insulations, fiber glass pipe insulation, "Cell-Tite" foamed rubber tubing insulation, insulation adhesives. New flame resistant "Silvercote" FR duct liner which has Underwriter's label and satisfies 90-A and 90-B codes; "Cell-Tite" insulation tubing and flat sheets; reflective vapor barrier for added thermal insulation, will be featured.

SKUTTLE MFG. CO., 140 Summit, Milford, Mich. — Booth 668

R. W. Geisler, K. M. Fournier, L. J. Roberts, H. M. Hadley.

Automatic humidifiers and humidification systems, washable electrostatic air filters. New products will be announced.

SLANT/FIN RADIATOR CORP., 130-15 89th Rd., Richmond Hill 18, N.Y. — Booths 435, 437, 439

Al Buschel, Al Cherney, Armand Friedland, Lee Jacobson, Milton Brooks, Herb Steiner, Norman Stoll, Mike Lavagnino, Ralph Bautz, Howard Berman, Jack Robinson, Mel Dubin, Richard Eisbrenner, Marvin Hendler, Myer Bressen, Edward Kelly, Tom Osberger, David Raley, Robert Sweiger, Lewis Davidson, Red Miller, Tom Urell, Tom Urell, Jr., David Goggin, William McLellan, Ted Coon, Gus Hartman, Arnold Totter, Don Phillips, Ray Monahan, George Zingsheim.

$\frac{3}{4}$ in. "Fine/Line" hydronic baseboard, "Multi/Pak" baseboard, commercial fin pipe, commercial enclosures, "Hydro-Tite" expansion joint, VFR finned radiation, P. G. cushion seal pipe guards, apartment house heating system, builders' program (selling ideas and merchandising programs for homes and apartment buildings). "Multi/Pak" baseboard for multi-story construction will be featured.

SMITH CO., INC., THE H. B., Westfield, Mass. — Booth 614

John E. Reed, Weston B. Shepard, Howard J. Lavaty, Richard T. Lavaty, William R. Reger.

Cast iron sectional boilers. Planned to exhibit latest home heating boiler, the "Pac Fourteen," which was introduced in 1960. This is a completely assembled packaged oil burner unit. It is also hoped to have available a new model of 44 "Mills" boiler for institutional and commercial use. This boiler will be a completely revamped and modernized unit which will be introduced at the show.

SMITH CORP., A. O., PERMAGLAS DIV., P. O. Box 28, Kankakee, Ill. — Display in AGA Section, Booth 522

Don Williams, Dave Coon, Ken O'Gorman, Lance Becker, Tom Munford.

Complete line of gas fired space heating boilers for commercial and residential applications, lightweight, fast response, all nonferrous construction, matched to modern radiation design.

SMITH CORP., A. O., 3533 N. 27th St., Milwaukee Wisc. — Booths 1130, 1132

C. M. Poston, R. E. Axthelm, W. B. Albright, D. E. Phelan, J. M. Shea, M. F. Wendeln, T. L. Taylor.

New "Sealed-Capsule" blower motors, actually running in a severe atmosphere, and hermetic motors will be featured. Motors representing complete line will be included in display. "Big Smith," the "horse" made of 20 motors totalling 200 hp, will be stabled in booth to demonstrate that the exhibitor "Has The Horses."

SNIPS, 5707 W. Lake St., Chicago 44, Ill. — Booth N-139

Publication.

SOUTHWEST MFG. CO., P.O. Box 151, Aurora, Mo. — Booths 608, 610

Roy C. Hauck, B. T. Church, Joe Fisher, Earl Schreiber, C. J. Smith, Wallace Shay, James Gold, Harry Schultz, Harvey Blair.

Air conditioning: remote air cooled, 2-$7\frac{1}{2}$ hp; remote heat pump, 2-5 hp; self-contained heat pump, 2-3 hp. Heating — gas fired: air conditioning furnace, hi-boy; horizontal furnace; counterflow furnace. Furnaces designed expressly for air conditioning and complete line of air conditioning, 2-$7\frac{1}{2}$ hp, remote air cooled with matching coils and blower units will be featured.

SPARTAN CONVECTOR CO. INC., 52-55 74th St., Maspeth, Long Island, N. Y. — Booth 308

Albert Levine, William Richards, Ben Drachler, Harry Gorelick, Bob Gross, Bill Biltzer, Jerry Ross, Harold Goldstone.

Hot water and steam convectors, hot water baseboard. New line of baseboard radiation to be featured.

SPORLAN VALVE CO., 7525 Sussex Ave., St. Louis 17, Mo. — Booth 1254

H. T. Lange, H. F. Spoehrer, W. F. Wischmeyer, W. H. Krack, J. T. Barry, J. E. Dannels, M. D. McAnany, R. E. Niedermeier, J. D. Boing, W. L. Canfield, H. F. Shield, T. E. Enos, E. C. Fockler, C. C. Grote, R. D. Hutchings, F. G. Jaeger, J. J. Mays, Alan Owens, R. H. Parlin, D. B. Rentschler, T. H. Silary, P. H. Weir, F. H. Spoehrer.

Thermostatic expansion valves, refrigerant distributors, solenoid valves, "Catch-All" filter-driers, strainers, LMC "Level-Master" control for flooded systems, "See-All" moisture and liquid indicators, reversing valve (four-way change-over control). Three of latest developments in refrigeration and air conditioning controls will have prominent space, including new solenoid pilot control, reversing valve, four-way change-over control for heat pump applications, two "See-All" moisture and liquid indicators, one with sweat connections for $\frac{7}{8}$ and 1-$\frac{1}{8}$ in. line sizes, the other a female flare swivel with $\frac{3}{8}$ and $\frac{1}{2}$ in. connections.

SPRAGUE ELECTRIC CO., North Adams, Mass. — Booths 1227, 1229

SPRAYING SYSTEMS CO., 3201 Randolph St., Bellwood, Ill. — Booth 758

SQUARE D CO., 4041 N. Richards St., Milwaukee 12, Wisc. — Booth 510

STANDARD ELECTRIC CO. — see PERMALIFE GLASS FIBER DIV.

STANDARD INSTRUMENT CORP., DIV. of HEAT-TIMER CORP., 657 Broadway, New York 12, N.Y. — Booth 425

STANDARD MFG. CO. — see AUTOMATIC HUMIDIFIER CO.

STANDARD REFRIGERATION CO., 3535 W. Fillmore St., Chicago 24, Ill. — Booth 307

H. M. Goldberg, Russ Cook, Dwight Orr, Ralph Porter, Robert Rose, Richard Levin, H. A. Goldberg.

Condensers, receivers, heat exchangers.

STANDARD STAMPING & PERFORATING CO., 3131 W. 49th Pl., Chicago 32, Ill. — Booth 1054

STANLEY ELECTRIC TOOLS DIV. of THE STANLEY WORKS, New Britain, Conn. — Booth N-435

STANLEY WORKS, THE, STANLEY ELECTRIC TOOLS DIV., New Britain, Conn. — Booth N-435

STAR EXPANSION INDUSTRIES CORP., P. O. Box 108, Mountainville, N. Y. — Booth 208

STEINEN MFG. CO., WM., Heating Products Div., 43 Bruen St., Newark 5, N.J. — Booth 1244

Wm. F. Steinen, Chris Jensen, Jr., Vernon Griebel, Olin C. Friant, Jr., Joseph J. Stocki, Bruce McLouth, E. Huckins, C. B. Wilson.

Complete line of commercial and residential draft regulators, oil burner nozzles, ignition electrodes, flame inspection mirrors, adapters, nozzle kits, nozzle tools, nozzle filters and strainers, plus comprehensive "nozzle guide" booklet which simplifies oil burner nozzle selection. New nozzle and a draft regulator demonstrator unit will be featured.

STEINEN MFG. CO., WM., Industrial Nozzle Div., 43 Bruen St., Newark 5, N.J. — Booth 1244

Wm. F. Steinen, Chris Jensen, Jr., Vernon Griebel, Olin C. Friant, Jr., Joseph J. Stocki, Gordon Taylor, Wm. Jones, R. Wiegand, J. W. Peterson.

Representative line of standard industrial and corrosion resistant spray nozzles used in air conditioning, humidifying, brine spraying, evaporative cooling, roof cooling, cooling towers, air washers, aerating and spray ponds, plus line strainers for varied applications. Also, display of metal cleaning, finishing and phosphatizing nozzles. Demonstrator booth will show multiple range of spray nozzle characteristics available.

STEPHENS-ADAMSON MFG. CO., SEALMASTER BEARING DIV., Ridgeway Ave., Aurora, Ill. — Booth 133

C. B. Hurd, George I. Marsh, Richard Glavan, Phil Hurd.

Ball bearing units — pillow block, flange, flange cartridge, take-ups, rubber mounted bearing units, as well as many specials. "Spherco" rod ends and spherical bearings. Low cost lubricated-for-life L series pillow blocks, two or three bolt flange units, will be featured.

STEWART-WARNER CORP., Heating & Air Conditioning Div., Lebanon, Ind. — Booths 1150, 1251

Joe Johnson, Bob Perkins, Phil Bohmann, Bill Momeny, Warren Melgaard, I. G. (Newt) Brownlee, Dick Fuller, Bill Judd, Walter Blake, Norman Gill, Ray DeVaney, Carl Lang.

Complete line of oil and gas furnaces and boilers, air conditioning, heat pumps, and electric furnaces. Special section of booth will show extras offered in the way of management and sales guides and training.

STODDARD INDUSTRIES, INC., 3383 E. Layton Ave., Cudahy, Wisc. — Booth 427

Ford Stoddard, Robert M. Stoddard, Craig Stoddard, Eugene O'Sullivan, Frank Gibbons, John E. Peterson, Lin J. Krause, Arthur E. Duwe, Maurice Davies.

"Dust-magnet" electrostatic "Lifetime" air filter with "Poly-mag 80."

STOKERMATIC CO., 1610 Industrial Rd., Salt Lake City, Utah — Booth 336

STRONG, CARLISLE & HAMMOND DIV. of WHITE SEWING MACHINE CORP., 508 Sandusky St., Conneaut, Ohio — Booth 748

E. S. Reddig, H. H. Maltbie, John A. Rodeno.

Complete line of steam specialties, consisting of inverted bucket steam traps, ball float traps, strainers, steam and air separators, pressure reducing valves, continuous blowdown valves.

SUNDSTRAND CORP., SUNDSTRAND HYDRAULICS DIV., 2210 Harrison Ave., Rockford, Ill. — Booths 617, 619

SUNDSTRAND HYDRAULICS DIV. of SUNDSTRAND CORP., 2210 Harrison Ave., Rockford, Ill. — Booths 617, 619

SUN-RAY BURNER MFG. CORP., 139-24 Queens Blvd., Jamaica 35, N. Y. — Booth 715

Messrs. Marin, Metzger, Luft, Sones, Adcock.

High pressure oil burners for Nos. 2-4 and 5 fuel oil, fuel transfer pumps.

SWARTWOUT FABRICATORS, INC., 100 E. North St., Kokomo, Ind. — Booth 1014

G. V. Patterson, R. E. Parshall, sales staff, sales representatives.

Power and gravity ventilators for industrial and commercial buildings, including new "Fiber-Aire" power ventliators with all fiber glass housings, and "Lite-'n-Aire" gravity units that combine ventilation and skylighting. Introduction of "April Showers" sprayed roof cooling systems as a new division of Swartwout Fabricators will be featured.

SYNCHRONOUS FLAME, INC., Walworth, Wisc. — Booths N-103, N-105

TACO HEATERS, INC., 1160 Cranston St., Cranston 9, R.I. — Booth 1011

Joseph Balter, Peter L. Quattrochi, Hubert A. Essley, Kendall Fiske, Wilfred Wales.

Pumps, heat exchangers and heating specialties.

TANN CORP., CONGRESS DRIVES DIV., 3750 E. Outer Dr., Detroit 34, Mich. — Booth N-427

H. Tann, D. Tann, I. Tann, S. Chosid, A. Dueweke, C. Rosen.

V-belt pulleys, FHP V-belts, shaft collars, flexible couplings, bearings.

TECUMSEH PRODUCTS CO., Tecumseh, Mich. — Booths 339, 343

A. S. Russell, E. D. Halsey, H. M. Kelso, P. G. Colgrove, D. J. Bowen, T. W. Rundell, W. E. Macbeth, and representatives from all district offices.

Complete line of air conditioning compressors, 1 through 5 hp. Exhibit will show complete line of air conditioning and heat pump compressors, will include demonstration of revolutionary new patented anti-slug system. Cutaway 5 hp compressor incorporating new mechanical anti-slug device, cutaway CL30 compressor representative of new line of heat pump and air conditioning compressors from 2½ through 4 hp will be featured.

TELEVANCE CORP., P. O. Box 3043, St. Louis 23, Mo. — Booth 444

TEMCO, INC., 4101 Charlotte St., Nashville 9, Tenn. — Booths 621, 623

TEXAS INSTRUMENTS INC., METALS & CONTROL DIV., 34 Forest St., Attleboro, Mass. — Booth 43

THATCHER FURNACE CO., Center St., Garwood, N.J. —Booths 1025, 1029

R. M. Cook, S. B. Leigh, G. Reynertson.

"Blue Ribbon" furnaces "Golden" boilers. New gas and oil fired steel boilers will be featured.

THERMAC CO., 14296 E. 6th St., Corona, Calif. — Booth 944

THERMAL ENGINEERING CORP., 2605 W. Dallas Ave., Houston 19, Texas — Booths 124, 225

John C. Fontana, Edgar A. Rapp, Gerald M. O'Dwyer, James C. Barr, T. J. Waddell, H. D. McMillan, L. B. Moss, R. S. Beck, B. R. Lassek.

Fan type, high pressure, double duct air conditioner; fan type air cooled condenser; type EC compact air conditioner; type TH small commercial air conditioner; cooling and heating coils; fan and coil units.

THERMO-PAK BOILERS, INC., 404 S. Palm Ave., Alhambra, Calif. — Booth N-429

THERMO-PRODUCTS, INC., 309 Garfield, North Judson, Ind. — Booth N-220

Floyd Pease, William Bozung, James Schaeffer, John S. Cunningham, Claude W. Shank, Hubert M. Pugh.

Gas fired winter air conditioner, oil fired winter air conditioner, air cooled summer air conditioner, electric forced air heating system. New concept of electric forced air heating system with individual room control, entire room system installing in joist space of room floor, will be featured.

THERMOTANK INC., 11191 Lappin Ave., Detroit 34, Mich. — Booth 761

J. M. Drummond, W. E. Baars, B. K. Paget, J. Benn, S. Bednarz.

Constant volume mixing boxes, round and drum punkah louvers, combination light and air troffer.

THERMOWHEEL, INC., 10-10 50th Ave., Long Island City 1, N.Y. — Booth N-119

THRUSH & CO., H. A., W. 8th at N. Jefferson St., Peru, Ind. — Booth 733

TITUS MFG. CORP., P. O. Box 810, Waterloo, Iowa — Booth 902

D. L. Titus, R. W. Titus, Mrs. J. D. Davis, F. J. Coates, R. E. Wirth, F. G. Jager, G. F. Averill, H. E. Straub, J. L. Canady.

Complete line of registers, grilles, ceiling diffusers, outside louvers and penthouses, in addition to all aluminum line and various new products. Will feature new and important additions to exhibitor's line. Of particular interest will be certain unique designs representing a complete new concept in air distribution, including air outlets particularly adaptable for use in high velocity systems.

TJERNLUND MFG. CO., 2140 Kasota Ave., St. Paul 8, Minn. — Booths N-211, N-213, N-215

TOLEDO PIPE THREADING MACHINE CO., P.O. Box 1678, Toledo 3, Ohio — Booth 233

Blake M. Wilson, Robert Derbick, Donald Kilmartin.

Hand and power operated pipe threaders, copper tubing cutters, flaring tools, benders, power cleaning units for copper tubing and fittings.

TORIDHEET DIV., CLEVELAND STEEL PRODUCTS CORP., 16025 Brookpark Rd., Cleveland 35, Ohio — Booths 724, 728

TORRINGTON MFG. CO., THE, 100 Franklin Dr., Torrington, Conn. — Booth 947

TRANE CO., THE, La Crosse, Wisc. — Booths 3, 7

TRERICE CO., H. O., 1420 W. Lafayette Blvd., Detroit 16, Mich. — Booths N-408, N-410

Leslie Rackham, Kenneth Kenzel, John Mazur, S. B. Mercer, Lou Smith, E. B. Feys, J. L. Brackett.

Complete line of thermometers, including industrial, dial indicating and recording types, indicating and recording pressure gauges, self operating and air operated temperature controllers, steam traps, air filters. New budget priced line of indicating thermometers for heating and air conditioning, including 6½ in. case stainless steel front industrial thermometer, 9 in. case stainless steel front industrial thermometer and 3½ in. dial indicating thermometer will be featured.

TRIANGLE ENGINEERING CO. — see JOHN FELTER CO.

TRION, INC., 1000 Island Ave., McKees Rocks, Pa. — Booth N-507

E. W. Meyers, Jr., N. F. Eichelsbacher, R. L. Anthony, R. E. Sweitzer, W. R. Murdock, W. C. Amos.

New high capacity air cleaner, TFA fan adapter, TPF panel filter, UMT utility model, room unit, negative ion generator.

TRIPLEX HEATING SPECIALTY CO., INC., 252 N. Grant St., Peru, Ind., — Booth 126

Louis W. Wise, R. S. Waite, L. R. Peters.

Line of hot water heating plus a live exhibit of a running circulator showing removal of air from the piping system of a heating plant to the provided expansion tank.

TUTTLE & BAILEY DIV. of ALLIED THERMAL CORP., 215 Warren St., New Britain, Conn. — Booth 768

D. D. O'Neill, R. D. Tutt, Paul Hemberger, William Batchelor, Frank W. Adams, James H. Faller.

Grilles, registers and ceiling diffusers. Extruded aluminum products will be featured.

TUTTLE ELECTRIC PRODUCTS, INC., Kirkland, Ill. — Booth N-339

TUTTLE & CO., H. W., 805 S. Evans, Tecumseh, Mich. — Booth 671

Mrs. Madeline K. Tuttle, H. W. Tuttle, Jr., M. E. Bailey.

Supplemental resistance heaters for heat pumps, electric resistance duct heaters with and without controls, electric blast heaters for electric furnaces, strip heaters for baseboard application. Package heating units for duct installation will be featured.

XXth CENTURY HEATING & VENTILATING CO., THE, 96 Ira Ave., Akron 1, Ohio — Booth 1006

J. Garver Kerch, John G. Kerch, Jr., Walter H. Stashkin, Roger Schaich.

Gas, oil and coal cast iron furnaces.

TYPHOON AIR CONDITIONING DIV. of HUPP CORP., 505 Carroll St., Brooklyn 15, N.Y. — Booths 234, 236, 238

UNION CARBIDE DEVELOPMENT CORP., Div. of UNION CARBIDE CORP., 270 Park Ave., New York 17, N.Y. — Booth 948

K. M. Hillas, W. L. Gabbert, L. S. Kelly, D. K. Harrison, R. D. Schultheiss, F. W. Nystrom, J. Buonocore, Jr., A. G. Barry, J. D. Harrigan.

"Ulok" air filters, both cube and panel types; "Dynel" filtering media of various thicknesses for special sizes and applications. Features will include large dust holding capacity of cube type filter design; mechanical separation or reverse loading of dust particles in cube "Ulok" filter; ease of replacing and disposing of cube "Ulok" filters.

UNION DAMPER CO., THE, Union, Ill. — Booth N-136

John F. O'Hanlon, Donald P. Gladish, Edward Kruse, Lou Rathbun.

Duct dampers, both manually operated and remote controlled; fusible link fire dampers; outdoor air intakes equipped with filters; louvers for outdoor intake or exhaust; louvers and shutters, automatically or manually controlled.

UNITED SHEET METAL CO., INC., 883 N. Cassady, Columbus 19, Ohio — Booths 874, 973

W. M. Harmon, J. D. McGill, Evan Lilygren, E. M. Antle.

Spiral pipe and fittings for air movement. New product line will feature machine-formed fittings that offer extremely low friction loss and consistency of performance without irregularity of handmade sheet metal fittings. Booth will feature a working demonstration of the comparative performance of machine-formed and handmade fittings.

UNITED STATES AIR CONDITIONING CORP., P.O. Box 360, Delaware, Ohio — Booth 648

William Moiselle, Robert D. McLain, Reaver Culbertson, E. J. Conley.

Actual model of "Modu-Aire" fan-coil unit.

Also, photographs of heating, ventilating and air conditioning products including self-contained central station air conditioners, water cooled and air cooled package equipment, water chillers, air handling equipment.

UNITED STATES GYPSUM CO., 300 W. Adams St., Chicago 6, Ill. — Booth N-120

Ralph M. Thompson, Robert M. Walker, Joseph M. Daffron, Norman R. Bickhaus, Roy W. Graham.

"Dustgard" air filter products.

UNITED STATES REGISTER CO., 344 E. Burnham St., Battle Creek, Mich. — Booth 1032

J. R. Bennett, Russell B. Morey, E. P. Kromdyk, C. J. Pearson, A. A. Stagg, F. C. Bowers, W. B. Bowers.

Air conditioning registers, grilles, diffusers and accessories — commercial and residential; back pressure dampers; exhaust fan dampers, outside intakes; filter grilles and frames; round ceiling diffusers and dampers; square ceiling diffusers and dampers; complete lines of gravity baseboard, sidewall and floor registers and faces, perimeter base, floor and sidewall diffusers and intakes.

UNIVERSAL DIFFUSER CORP., 38 Marbledale Rd., Tuckahoe, N.Y. — Booth 1149

Charles Davies, William Goffman, Albert DeLardi, William Hart, B. A. Kane.

Round diffusers, square diffusers, rectangular diffusers, slot air diffusers, door and partition grilles, lattice grilles and registers, "Grilline," single and double deflection supply grilles; single and double deflection supply registers; air extractors; oppose blade dampers.

VAN DORN IRON WORKS CO., THE, Infra-Red Div., 2685 E. 79th St., Cleveland 4, Ohio — Booth N-116

VAN-PACKER CO., DIV. OF THE FLINTKOTE CO., 1232 McKinley Ave., Chicago Heights, Ill. — Booth N-424

O. E. Collins, M. A. Krug, W. W. Ford, K. J. Sables.

Factory-built refractory smokestack, factory-built masonry chimney. Smokestack now listed for installation with zero clearance to special roof thimble now available. Chimney now available with metal brick imprint housing in addition to cement asbestos, both available in four colors.

VAPOR HEATING CORP., 6420 W. Howard St., Chicago 48, Ill. — Booth 331

L. A. DiLucchio, W. E. Wright, H. Kirchhoff, John Cain, A. Kirchhoff, R. Kirchhoff, R. A. Brown, W. R. Bradley.

Tentatively, two of the three following items: 100 hp boiler, 150 hp boiler, "Hi-R-Temp" liquid phase (hot oil) heater. Photographs and schematic diagrams of typical installations, actual boilers, literature, tape recordings describing installations.

VENTFABRICS, INC., 640 N. Kedzie Ave., Chicago 12, Ill. — Booth 421

James Bateman, DuPont Snowden.

Fabrics for flexible connections; insulated access doors; access door hardware and gasketing; damper blade hardware; damper control hardware. Products will be displayed installed and operational in section of duct.

VERNCO CORP., Columbus, Ind. — Booth 223

VIBRATION ELIMINATOR CO., THE, 10-28 47th Ave., Long Island City 1, N.Y. — Booth 1259

Sam Kahn, Max E. Miller, Louis Imbert.

Springs, rubber-in-shear and cork vibration eliminators to prevent transmission of vibrations from fans, compressors, pumps, air handling cabinets, chillers, cooling towers, etc. Trained engineers will be on hand to discuss application of products and to offer assistance to engineers, equipment manufacturers and contractors on specific problems.

VIBRATION MOUNTINGS AND CONTROLS INC., 98-25 50th Ave., Corona 68, N.Y. — Booth 658

B. A. Ross, J. M. Leak, J. J. Wilson, M. B. Chalfen, J. Spachner, E. W. Higgins.

Complete isolation materials for control of noise and vibration in heating and air conditioning, including latest developments in spring isolation and techniques. Samples of all isolation materials, cut away to show construction details and quality features, and photographs of installations will be shown.

VIKING AIR PRODUCTS, Div. of THE LAU BLOWER CO., 5601 Walworth Ave., Cleveland 2, Ohio — Booths N-409, N-411

William Gold, John A. Green, John Furin, M. F. Mackenzie, T. J. McIntyre, C. Nenadal.

"Super-6000" plate type humidifier, electric humidifier, 20-year permanent filters, "Jet" room balancer, "Thirs-Tee" evaporator plates. Electric humidifier will be shown in operation as will room balancer actually on duct work.

VILTER MFG. CO., THE, 2217 S. 1st St., Milwaukee 7, Wisc. — Booth 329

A. O. Vogel, M. Tokach, J. Kupfer, C. D. McCrindle, J. F. Heil, B. Stahl, R. Hall, J. W. Deroche, H. H. Mc Kinnies, R. A. Klockner, D. E. Perham, J. P. King.

Exhibit will feature R-22 "Uni-Chiller;" included in this packaged water chiller are a four-cylinder VMC compressor, shell and tube condenser and flooded type water chiller. Scale model of air agitated ice builder, used in latent heat storage systems, will be shown.

VULCAN RADIATOR CO., 775 Capitol Ave., Hartford 6, Conn. — Booth 846

Martin Trachtenburg, Walter T. Bell, George D. Waterman, Jack Rita, Robert Sand.

Finned tube radiators and sheet metal enclosures for residential, institutional and commercial applications — hot water, steam or electric. Classroom heating and ventilating equipment. "Linoventilator" classroom heating and ventilating system designed for economy, efficiency and functional beauty and institutional "Floor Line" enclosures, space-saving, slim and compact, dimensionally approaching baseboard styles, will be featured.

W-M MFG. CO., 4505 W. Armitage Ave., Chicago 39, Ill. — Booth N-413

Wallace Landau, Marton Andersen, Irving Andersen.

"Weather-Magic" remote air cooled equipment, 2, 3, 4, 5 tons; air handlers; evaporator coils; gas furnaces.

WAGNER ELECTRIC CORP., 6400 Plymouth Ave., St. Louis 14, Mo. — Booth 1109

WALKER MFG. & SALES CORP., 1701-17 Penn St., St. Joseph, Mo. — Booths N-308, N-310

Lakin Meade, Andrew H. Ziph, Raymond Denning, George Mitchell, Ed Colley, B. W. Kirby, E. S. Cushing, R. E. Michel, W. F. Barry, William H. Moore, James Connelly, F. Stewart Long, Robert L. Bitzer, John H. Bitzer, Carl J. Forve, Jack B. Blenk, Ed. T. Rothe, Howard Hooven, Jack R. Rott, Fred Spengler, Gene Vespa, Wm. Burgert, B. W. Kirby, H. Walter Flower, L. J. Krause, Clyde L. Pearson, H. Barnett Simms, Sam F. Holcombe, B. L. Rushton, Mercer U. Ware, Don Trapp, V. B. Kathe.

Draft regulators, new dual purpose draft control, single acting for solid fuels, double swing for gas; draft inducers with new saddle mount to simplify industrial installations; chimney cap with stainless steel finish; new vent cap with adjustable base clamp to make installation universal on all types of vents. Installation display of new fireplace draft inducer, new draft inducer model for commercial and industrial use, and new gas vent crown will be shown for first time.

WALLACE CO., WILLIAM — see METAL-BESTOS

WALTON LABORATORIES, INC., 1186 Grove St., Irvington 11, N.J. — Booth 37

J. R. Lewis, J. B. Feldermann, George Lyons, Jim Doran, Frank Hartwell, Al Janks.

Complete line of residential and industrial humidifiers for space as well as duct applications. Featured will be consultants' corner which consulting engineers are invited to visit to obtain latest engineering information on humidification.

WALWORTH CO., 750 Third Ave., New York 17, N.Y. — Booth N-309

N. Ewalt, L. E. Garland, L. E. Schmidt, S. W. Ardery, C. H. Chappell, J. J. Doyle, G. Fackler, N. L. Gorny, R. V. Holladay, P. M. Jarabek, J. W. Jones, E. J. McIntee, C. R. Norman, F. C. Smelter, R. F. Spencer, E. G. Venables, R. S. Witherell, W. F. Spence, H. Strauss, G. A. Hoffman.

Gate, globe, angle, check in bronze, iron and steel; special items of interest — lubricated plug valves and PVC (plastic) products; PVC y-globe valves, check valves and strainers; complete line of PVC fittings; bronze solder joint valves. "Rolotork" LPV, PVC products, new bronze solder joint valves will be featured.

WARREN ENGINEERING CO., Main St., Route 24, Broadway, N.J. — Booth 1243

Thomas P. Bruno, George E. Breece, Jr., Ray Welch.

Pressure reducing valves, temperature regulators, diaphragm control valve, pressure gauges, strainers, electric motor operated valves, thermometers. New "Warren Wynn" straight-through diaphragm valve for corrosive fluids will be exhibited for first time. Air operated, manually operated, electrically operated, or hydraulically operated.

WATERLOO REGISTER CO., INC., P.O. Box 72, Waterloo, Iowa — Booth 29

E. T. Kelly, C. T. Roff, F. J. Kurth, A. Rust-Oppenheim, W. F. Peters, F. A. Waechter, R. F. Hayes.

Registers and grilles.

WATERMAN-WATERBURY CO., THE, 1121 Jackson St. N.E., Minneapolis 13, Minn. — Booth 324

Lindley J. Reay, Stuart A. Smith, Ira Metcalf, James M. Wilson, James H. Bazille, Ted Bujewski, Roger Wharton.

All-new "Comfortrol" 8-series, bypass, year 'round air conditioner and new "Comforclime" (7-series lo-boy) winter air conditioner. Both units available in gas or oil. Competitive gas fired unit, the "three G", will also be shown, hi-boy, lo-boy and down-flo. New "Comfortrol" air conditioner will be most prominent feature; it has specially designed damper section and indoor-outdoor thermostat.

WATTS REGULATOR CO., 10 Embankment St., Lawrence, Mass. — Booth 224

Geo. B. Horne, R. H. Chaffee, W. M. Dillon, R. J. Tesar, J. F. Keegan, Mike Mercury, T. H. Liebig, A. J. Harvey.

Circulator and complete line of hydronic accessory products, automatic T and P relief valves, reducing valves, boiler water level controls. Section devoted to new FHA standards relating to safety devices and new American Standard 221.22-1958 and panel displays of products which comply, and explanation of standard, will be featured.

WAUKESHA MOTOR CO., Waukesha, Wisc. — Booth 1125

WEATHERHEAD CO., THE, 128 W. Washington Blvd., Fort Wayne, Ind. — Booth 769

Joe Holiger, James Baker, John Allen, A. S. Wade, C. T. Craig, J. F. Gilliland, F. J. Bromilow, J. W. Maher.

Brass and steel tube and pipe fittings, bulk hose, reusable hose ends, hose assemblies, receivers, tanks, driers, refrigeration valves, push-pull controls, tube working tools.

WEBCO BOILER DIV., RAY OIL BURNER CO., 47 Rousseau St., San Francisco 12, Calif. — Booths 229, 231

I. J. Sprott, R. W. Winskill, J. C. Draper, F. J. Moran.

New three-pass packaged boiler, high and low pressure, steam or hot water, wide capacity range to fire gas, all grades of fuel oil, combination gas-oil; exclusive "Viscomatic" firing control; new heavy oil pressure burner, three sizes with capacity range 4 to 30 gph.

WEBSTER & CO., INC., WARREN, 17th & Federal Sts., Camden 5, N.J. — Booths 1138, 1144

WEBSTER ELECTRIC CO., 1900 Clark St., Racine, Wisc. — Booth 1107

W. J. Wenszell, L. S. Ehrich, Jr., J. Engholt, G. Brinkerhuff, J. Kralicek, P. Deuble.

Fuel units, ignition transformers.

WEIL-McLAIN CO., Michigan City, Ind. — Booth 903

E. R. Westphal, M. E. Mitchell, R. M. Stockwell, N. E. Westphal, J. E. Sorensen.

Residential and commercial cast iron boiler burner units for oil; heavy oil and combination gaslight oil burners; residential and commercial cast iron gas boilers; gas boiler electronic control panels.

WEIL PUMP CO., 1530 N. Fremont St., Chicago 22, Ill. — Booths 954, 958

WELBILT AIR CONDITIONING & HEATING CO., Route 524, Lakewood Rd., Farmingdale, N.J. — Booth 750

WELTY-WAY PRODUCTS, INC., 714 First Ave. NW, Cedar Rapids, Iowa — Booth N-106

Arthur Welty, Quentin D. Miskell, Lloyd Kline.

Power sheet metal roll forming machines and automation for panel and roll forming machines: "Slear" (slitting shear) demonstrated; automatic gutter forming machine; feeder-shear for panel and roll forming machines; pipe forming machine; elbow and collar attaching machine. Demonstration of all-new "Slear" (slitting shear) feeding into automatic gutter forming machine producing 2½ ft per sec of gutter, demonstration of elbow and collar attaching, samples of gutters manufactured by gutter forming machines will be featured.

WESTERN SUPPLY CO. (Mfg. Div.), 315 W. Third St., Hutchinson, Kansas — Booth 138

J. C. Owens, Doyle Rumsey, Max Solomon, Howard Bentley, Geo. Brown, T. V. Heath, Herschel Frasher.

Air and water cooled air conditioning units, residential and commercial; water chillers and air handling units; evaporators.

WESTINGHOUSE ELECTRIC CORP., Air Conditioning Div., Box 510, Staunton, Va. — Booth 955

WESTINGHOUSE ELECTRIC CORP., Motors & Control, Buffalo, N.Y. — Booth 2

WESTLUND INDUSTRIES, INC., 26 Main St., P.O. Box 216, East Haven, Conn. — Booth N-422

WHEEL TRUEING TOOL CO., 3200 W. Davison Ave., Detroit 38, Mich. — Booth 1255

Karl J. Klapka, R. E. Chatterton, R. Maher, D. Harris, J. Enghauser, A. Bauer, K. Congdon, A. Scooros, R. Tiddens, R. Smith, J. Dokler, H. Edington, R. Olson, R. Martin.

"Truco" diamond drill bits, diamond drilling machines, diamond drill motors, swivels, water pickup, diamond drilling accessories, "Tru-Vac" vacuum base, masonry saws, concrete saws, abrasive blades, "Trubond" blades, diamond blades, new "Truline" abrasive blades.

WHITE-RODGERS CO., 1209 Cass Ave., St. Louis 6, Mo. — Booths 1117, 1121

WHITE SEWING MACHINE CORP. — see STRONG, CARLISLE & HAMMOND DIV.

WIEGAND CO., EDWIN L., 7500 Thomas Blvd., Pittsburgh 8, Pa. — Booth 1237

C. F. Kreiser, George Sowash, W. G. Potter, R. L. Boyd, W. G. W. Glos, Lew Ambrose, Don Sprague, Joe Basil, A. B. Conant, Jack Easley, Wm. Muehl.

Flameless electric comfort heating equipment, such as classroom unit ventilators with draft barrier cabinets, unit heaters, heaters for corridors and vestibules, heaters for mounting in forced air ducts, radiant heaters, heaters for snow melting, special heaters for incorporation in equipment of other manufacturers.

WILL-BURT CO., THE, Orrville, Ohio — Booths N-329, N-331

WILLIAMS OIL-O-MATIC HEATING CO., DIV. NATIONAL UNION ELECTRIC CORP., 851 W. Third Ave., Columbus, Ohio — Booth 550

W. J. Olsen, R. Guda, E. Clifford, H. Hays, C. Bower, E. Wagstaff, R. Wentz, P. Norton, L. Sherman, D. Calori, E. Dawkins, L. Berghash, C. Lane, J. Curran.

New 800 series compact "Gas-o-matic" furnaces in basement, upflow and counterflow models, 60 to 160,000 Btu; new "Oil-O-Matic" basement model furnaces; new "Air-O-Matic" air conditioner evaporator and condensers for central air conditioning. The 800 series "Gas-O-Matic" furnaces of new compact design, permanent washable filter, small flue pipe sizes; new burners and heat exchanger, will be featured.

WILLIAMSON CO., THE, 3500 Madison Rd., Cincinnati 9, Ohio — Booths 109, 111, 113, 115

C. T. Pfirrmann, G. Leytze, P. Jensen, G. Trotta, R. Marquette, G. Schloemer, R. Smith, J. P. Field, R. Carnes.

Warm air furnaces; air conditioning units; duct, pipe and fittings; electric heat. Cooling will be demonstrated in operation, cooling a room area. Duct, pipe and fittings of exclusive "Seal-Tite" construction will be demonstrated. New line of furnaces with two stage operation will be shown. Electric heat for convected air systems will be exhibited.

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WIREMOLD CO., THE, Hartford 10, Conn. — Booth N-439

Paul O. Roedel, Robert S. Dutton, William E. Rejeski, Birger Hermanson.

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WITCO CHEMICAL CO., INC. — see PIONEER PRODUCTS DIV.

WOLVERINE TUBE, Div. of CALUMET & HECLA, INC., 17200 Southfield Rd., Allen Park, Mich. — Booth 1154

H. A. Harty, J. M. Dumser, R. C. Cash, R. B. Davis, J. H. Smith, S. E. Robb.

Copper, copper alloy, aluminum, and special metal tubing; aluminum extruded shapes; aluminum and copper refrigeration tube; "Trufin" integral type finned tubing; "Capilator."

WORLEY EQUIPMENT, INC., 2301 N. Knox Ave., Chicago 39, Ill. — Booth 221

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Coal stokers and related equipment.

WORTHINGTON CORP., Air Conditioning Div., Ampere Station, East Orange, N.J. — Booths 1063, 1067, 1069

A. J. Hackl, E. R. Michel, P. A. McLeod, Jr., R. O. Gundlach, area sales representatives.

Package multi-zone unit, blower-coil unit, air cooled condensing unit, "Roofair" unit, fan-coil unit, twin duct air blender, induction circulator, packaged air conditioning unit, package liquid chiller, fan, transportation refrigeration system, compressor units. "Full Choice" air conditioning will be featured.

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Gas, oil and coal cast iron furnaces.

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Appliance dollies and padded appliance delivery covers.

YORK CORP., York, Pa. — Booths 1210, 1224

YORK-SHIPLEY, INC., P.O. Box 349, York, Pa. — Booths N-101, N-102, N-201, N-301, N-302, N-401, N-402

York Power Div.: G. D. Frank, Warren Rutherford, H. A. Barnard, S. H. Shipley, Jr., Fritz Heede, Robert Shearer. **Jackson & Church:** F. E. Young, R. J. Hoover, Paul Adams, Karl Koons, Irvin Long, Al Nye. **York Heat Div.:** T. A. Crawford, K. O. Ralphs, Philip Seligson. **General Div.:** F. W. White, Ralph Whiteman.

York Power Div.: Industrial boilers to fire gas, heavy oil, gas and light oil combination; water boiler; high pressure steam boiler; low pressure steam boiler; rotary cup conversion burner; forced draft conversion burner with water cooled combustion chamber. **Jackson & Church:** Gas and oil suspended units, unit heaters, direct fired furnaces.

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Complete line of manually controlled surface, concealed, high pressure, floor line, remote control and air split regulators; dampers, adjustable air conditioning registers, grilles and baseboard diffusers for every type of heating and air conditioning installation.

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AIRFLOOR CO. OF CALIFORNIA, INC., 13729 E. Rosecrans Ave., Santa Fe Springs, Calif. — Booth 1128

BOILER EQUIPMENT TRUST CO., Amherst, Mass. — Booth N-117

KAISER ALUMINUM & CHEMICAL CORP., Kaiser Center, 300 Lakeside Dr., Oakland 12, Calif. — Booth 1010

LAUREL PRODUCTS, INC., P.O. Box 137, River Falls, Wisc. — Booth 212

McALEAR MFG., CO., 1901 S. Western Ave., Chicago 8, Ill. — Booth 748

NRC EQUIPMENT CORP., 160 Charlemont St., Newton 61, Mass. — Booth 114

PLAN HOLD CORP., 5204 Chakemco St., South Gate, Calif. — Booth 112

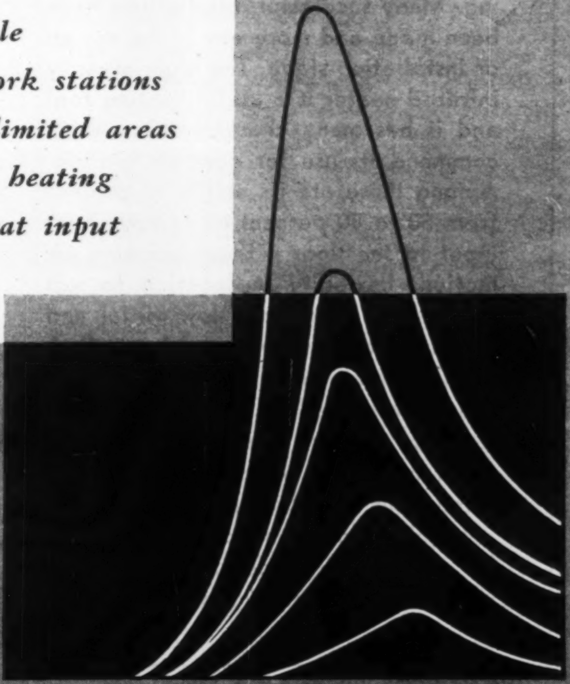
RADIO CENTRAL CO., 1900 Shermer Ave., Northbrook, Ill. — Booth 214

SPIRO U.S.A., INC., 20 N. Wacker Dr., Chicago 6, Ill. — Booth N-205

HPAC ENGINEERING DATA FILE

How to Apply High Intensity Infrared Heaters For Comfort Heating

- *Types of units available*
- *Spot heat scattered work stations*
- *Providing comfort in limited areas*
- *Design for total space heating*
- *Relate comfort and heat input*



Consider These Factors When Designing Infrared Heating Systems

HIGH INTENSITY infrared heating units are being selected with increasing frequency for heating industrial plants and other large volume heating applications. Many outdoor installations — widely publicized — have also been made and these too are increasing both in quantity and variety. This method of heating is another useful tool for providing in-plant comfort and "relief" heating out of doors. It is not a panacea for heating problems and requires intelligent design and application as does any system. The high intensity units do not supplant ducted air systems or unit heaters in all applications, but offer certain advantages which merit consideration. An important consideration is their ability to project to floor level from 50 to 80 percent of their total input without inducing high air motion. This tends to minimize stratification that may occur with improperly applied unit heaters or ducted air systems in large volume spaces.

In the November 1959 HPAC Engineering Data File[1], the fundamentals of radiant heating as they apply to high intensity radiant units, and some notes on application were discussed. In this report, only the application of this method of heating is considered. Qualitative observa-

Interest in high intensity infrared radiant heating for large volume industrial and commercial spaces is increasing. Many successful installations have been made and more are in the design or installation stage. The high intensity infrared heater is a useful heating tool and it has many characteristics which commend its use for comfort heating. Among these are its ability to project from 50 to 80 percent of its total heat input to the floor without inducing air motion, flexibility in location to suit changes in operations, low initial and operating costs when properly applied, and low maintenance requirements. They can be arranged to provide different levels of comfort over limited areas or spots in a space, or to provide comfort throughout an entire space.

In this report, some of the factors to be considered in design based upon visits to a number of plants, and case histories of several interesting designs are presented. The case histories illustrate the potential of the infrared heater and good practice in applying them.

The editors are indebted to the following engineers who provided much of the information included in this report:

J. W. Adams, manager, sales engineering, Panelbloc Division, The Betcher Manufacturing Corp.

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R. K. Crandall, chief mechanical engineer, McGeorge-Hargett and Hoag, engineers and architects

V. H. Heins, vice president, design and engineering, Luminator, Inc.

F. J. Prince, manager, sales engineering and service, Infra-Red Dept., Perfection Division, Hupp Corp.

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[1] *Numerals refer to references on page 244.*

tions made in a number of plants, and information collected from design engineers together with some interesting applications are presented herein. These illustrate good practice based on experience with the high intensity units under varying conditions of application.

Types of Units Available

For the purpose of review, two basic energy sources are used for comfort heating applications. These are gas and electricity. Oil-fired units available are used as portable heat sources but have no application in heating large spaces, at present. Of the other two types, several variations of each are available and these will be considered here in brief.

Gas-Fired Units

There are four basic types of gas-fired infrared generators. Of these only three at present find application in comfort heating applications. The fourth — devices employing a flame impinging upon a ceramic surface — are used only in process heating applications. The three types used for comfort heating are as follows:

1) A heat exchanger comprised of tubes or panels of either metallic or ceramic construction heated by internal combustion. That is, the radiating surface is located between the flame and the heated space. Typically in space heating applications, the heat exchanger is metallic. Surface temperatures in those used for comfort heating are approximately 750 F. These units generally must be vented. Rated inputs up to 125,000 Btu per hr are available. Units with inputs over 50,000 Btu per hr must be vented.

2) Combustion devices in which the gas-air mixture flows through a porous surface and burns on that surface. The surface is thereby heated and becomes the radiating surface. Porous ceramic materials, drilled ceramic plates, stainless steel mesh, and drilled stainless steel are some of the materials used. The surface temperatures of these heaters range from 1450 to 1650 F. In general, they are applied without direct venting and rated inputs are therefore limited to 50,000 Btu per hr.

3) Catalytic combustion devices in which the air-fuel mixture flows through a catalyst bed and flameless combustion results, once the catalyst is initially heated. Temperature of the catalyst or a radiating surface which may be placed downstream from the catalyst approach 650 F as a minimum. Since the temperature of the catalytic combustion process can be controlled within limits by varying the air fuel-ratio, this type of unit offers modulation of the radiant output by this means.

The gas-fired units emit their energy in the wave lengths of the far infrared region. The significance of this is discussed later. A more complete discussion of the gas-fired units can be found in Reference 2.

Electric Infrared Generators

The various types of electric infrared generators were discussed in detail in the article[3] "What Do We Know About Infrared Comfort Heating?" in the November 1960 issue of Heating, Piping & Air Conditioning. In summary those in common use are as follows:

1) The metal sheath heater which is a resistor embedded in an electrical insulating refractory enclosed in a metal tube. The surface temperatures of these heaters range from 1200 to 1800 F.

2) The quartz tube consists of a coiled element within a fused quartz tube. The tube volume is air filled and the element is supported by the tube. The temperature of the filament—the radiating element — ranges from 1200 to 1800 F.

3) The quartz lamp filled with an inert gas is the most recent electric infrared generator to become available. The filament temperature in these is about 4000 F.

Quality of Radiation

It should be noted that all of the infrared generators used for comfort heating — both gas and electric — generate or radiate the greater part of their energy in the far infrared region with the exception of the quartz lamp. The temperature of the infrared source affects the radiant efficiency of the unit (the ratio of useful radiant energy output delivered to the floor or the object to be heated to total energy input), which increases with source temperature, and the quality of the radiation emitted. The latter in turn affects the ability of the heated materials to absorb the incident radiation. Far infrared is more easily absorbed by most materials, though it should be remembered that the visible energy emitted must ultimately be absorbed after a suitable number of reflections. However, the direct radiation absorbed by a surface will generally be higher from a far infrared generator. Reference to the November 1959 HPAC Engineering Data File and to Reference 2 will provide more detailed information on the absorption of radiant energy by various materials.

Consider Individual Units

Infrared rays can be controlled by reflectors in the same manner as light. As a result, the units of different manufacture vary in the pattern of radiation that will be obtained from the heater. A plane radiating surface, a sheet of steel, for example, will radiate in a hemispherical pattern. The radiant energy of high intensity heaters is concentrated by reflectors over relatively limited areas.

The pattern of radiation varies with reflector design, as well as with the size and shape of the radiating surface. Some reflectors permit a wide scatter of the radiant energy output while others tend to concentrate the energy emitted over a much smaller area at any given distance from the radiating surface. Those with wide patterns can generally be located closer to the floor, or conversely, reflectors which contain the energy bundle are employed when high mounting heights must be used to clear cranes, etc. This latter minimizes radiation "scatter" which will heat the upper wall sections and increase their heat loss. The radiant efficiency of a unit depends upon reflector design, and the material of which the reflector is made as well as the operating temperature of the infrared source. Efficiencies of units available range from 30 to 60 percent for gas-fired and low temperature electric sources to 80 percent for the high temperature quartz lamp source.

When applying the infrared units for comfort heating, manufacturer's recommendations as to minimum mounting height and spacing should be followed. These recommendations are based on the pattern of radiant output from the units, and empirical information relating maximum radiation intensity and comfort.

How Infrared Heaters Are Applied

High intensity infrared units are used in three different ways to provide comfort. These are: 1) total space heating in which an entire plant is heated, 2) area heating in which only a small area within a plant is occupied and must therefore be heated, and 3) spot heating in which each work station is treated as a separate heating problem. Some of the factors that should be considered in determining the approach to be taken include: the occupant density, the nature

TABLE 1 — HEAT INPUT of infrared heaters given here for comfort of individual who is spot heated are based upon the Raber and Hutchison comfort equation and a surface area of the clothed body of 19.5 sq ft. Heaters which provide the heat inputs given should be arranged so that the individual is irradiated from at least two sides

Air and unheated surface temperatures, F	Rate of direct radiation heat transfer required for comfort, Btu per hr	Infrared heater input required for comfort for various heater radiant efficiencies, Btu per hr per sq ft				
		40*	50*	60*	70*	80*
40	1190	161	129	107	92	81
45	995	134	108	90	77	67
50	800	108	87	72	62	54
55	585	79	63	53	45	40
60	410	56	45	37	32	28
65	210	28	23	19	16	14

**Radiant efficiency or the ratio of useful radiant energy output to total energy input* of the work stations, the amount of infiltration or the quantity of ventilation required, and the over-all level of temperature required to safeguard the product, to prevent freeze ups of water services, etc.

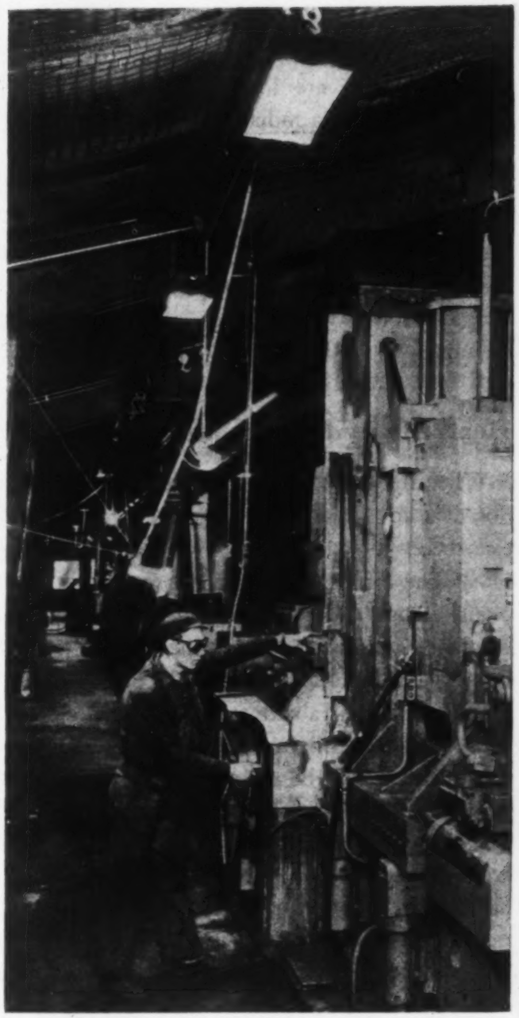
Spot Heat Scattered Work Stations

When the occupant density is low and work stations relatively static, spot heating will provide the most economical solution both from a first cost and an operation cost standpoint. The use of spot heating generally assumes that heat is not required for other purposes. An extremely high infiltration rate in conjunction with limited work stations also suggests spot heating.

In spot heating applications, it is desirable to provide radiation from two sides of the worker where this is practicable. The major amount of the radiation should preferably be directed below the worker's head. The input rates required to provide the necessary direct radiation for comfortable working conditions is given in Table 1. The values are given in terms of Btu per hr per sq ft of clothed surface of the individual for several radiant efficiencies.

The limitations of Table 1 should be noted. These values are conservative since they apply to lightly clothed, sedentary individuals. The heat production of working individuals and, thus, their required rates of heat loss will be greater so that less direct radiation will be required. Heavier clothing will usually be worn which further makes the values conservative. Offsetting these factors is the increased loss from the worker due to convection heat transfer in areas of high air motion. The values of Table 1 apply for relatively low air motion (25 to 30 fpm) and higher air velocities that may be experienced in practice will increase the heat loss.

The values of Table 1 assume that the radiation directed on the body is perpendicular to the surface of the body and that the body is uniformily irradiated. Boyd[3] has given in detail a method for applying electric infrared units for spot heating. While low locations of the units have certain advantages, spot heating can be accomplished by infrared heaters mounted overhead if attention is given to properly locating the units. In many instances, the nature of the work will prevent irradiation from both sides. In such cases, it should be remembered that all surfaces irradiated become warm and re-radiate or reflect energy to the individual. This plus the warm floor will tend to offset the disadvantages of providing radiation from only one side.



1 SPOT HEATING of individual work stations in this railweld shop is accomplished with two electric infrared heaters mounted 12 ft above the floor are shown here. Each heater contains two 1600 watt quartz lamps. Work stations are 35 ft apart in this 50 x 200 ft building. Heaters provide a radiant intensity of 115 Btu per hr per sq ft over a 10 by 16 ft area heated at each station

An example of spot heating is shown in Fig. 1. In this installation, an uninsulated, prefabricated steel building houses rail welding equipment. The building is approximately 50 ft wide and 200 ft long and is located in an area with an outdoor design temperature of −10 F. Two infrared heaters are located 12 ft above the floor and provide a radiant intensity in the area covered (about 10 ft by 16 ft) of approximately 115 Btu per hr per sq ft. In this installation, which has proven satisfactory, the face of the machine, the floor and a portion of the wall behind the worker re-radiate energy to him in addition to that which he receives directly from the unit.

Heat Limited Areas in Plant

When the work stations are confined to a portion of a large space, and heating is not required elsewhere, the area concept of heating is applied. The infrared system for a small area in a plant, at one end of a warehouse for example, would be designed in the same way as a spot heating installation. Units should be located to provide uniform radiation throughout the space at intensities consistent with the minimum temperature that will be maintained.

It is possible to maintain different levels of comfort in different portions of a large space without resorting to partitions by varying the amount of radiation installed. Comfort depends upon the intensity of radiation provided in the occupied zone as field experience indicates that the air temperatures in the heated and unheated portions of the space will tend to equalize by natural convection. Data given in Table 1 indicate the heat input rates required per sq ft of floor for providing comfort in limited areas of a plant.

An example of area heating is shown in Fig. 2. In this installation, the work area comprises about one-half of a 50 by 100 ft building. The work area is heated with gas-fired units located down the center of the 25 by 85 ft area heated. The radiant intensity in this installation is approximately 55 Btu per hr per sq ft of floor area heated. The storage area comprising the other half of the building is essentially unheated. In this system, operation of the heaters is controlled by an ambient thermostat located 4 ft above the floor.

For either spot or area heating an estimate must be made of the minimum air temperature that will be maintained if adequate radiation is to be installed. This requires an estimate of the heat loss of the structure and knowledge of the internal heat gains arising from the processes involved. Without an estimate of the minimum ambient temperature that will be experienced, there will be no assurance that comfort will be provided with a given radiation intensity. Solutions of some spot and area heating problems must of necessity be empirical because of the

2 AREA HEATING is applied here to heat shop half of a 50 by 100 ft building. The radiant intensity is about 55 Btu per hr per sq ft of floor. Warehouse space in other half of structure is not heated difficulty of estimating heat losses when only small areas within a structure are to be heated. Even so, such designs can be checked to determine within reasonable limits whether they will be adequate by applying the principles outlined earlier for spot heating.

Application of Infrared for Total Space Heating

While the properly applied spot heating and area heating systems represent efficient utilization of the infrared heater, the total space heating application is of most interest. The infrared heater is suited for heating large spaces and many such systems are in operation. Gas is the predominant fuel used for heating large plants. Units available can be operated with either propane or natural gas. However, the installation of electric infrared systems is under consideration for several large plants and some smaller installations have been made. The choice of energy used depends upon availability and the comparative owning and operating costs estimated by procedures used for the selection of energy for any system.

Some differences in application arise from use of the several types of units available. Where such differences occur they will be pointed out. Several case histories of plants heated with infrared are also presented.

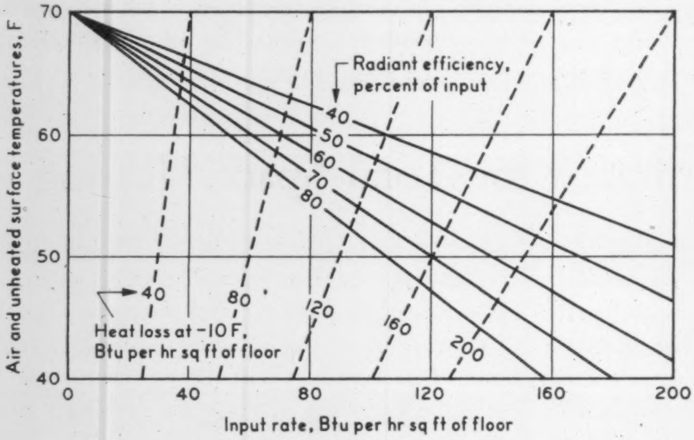
How Infrared Works

It was noted earlier that 30 to 80 percent of the input to infrared heaters is radiated to the floor of the heated space. The radiation is absorbed in varying quantities by the floor, tools, materials, and intervening structural materials. In addition, a small part of it may be absorbed by water vapor, carbon dioxide, and dust particles in the air. For typical mounting heights in well ventilated plants, the loss of radiation due to absorption of materials in the air is small and may be neglected. The radiation absorbed by water vapor and carbon dioxide for various conditions is given in Reference 1.

All of the surfaces upon which the radiation is directed become warm and contribute to the overall comfort of the heated space. These surfaces warm the air by convection heat transfer, and other surfaces by re-radiation. The heat that is lost from the unit by convection or with the products of combustion from unvented heaters rises to warm the underside of the roof to take care of its heat loss. Limited temperature data published[4] indicate that the floor level air and the floor surface temperatures are higher than those at higher levels. Thus, the system operates comfort-wise much as a radiant floor panel with one exception. The individuals receive greater quantities of direct radiation from the heaters. This serves to offset body heat losses by convection in areas of high air motion and radiation losses to cold exterior surfaces. This "reserve heating" capacity increases as the heat loss per sq ft of floor of the structure and, thus, the installed heater input increases. At high rates of heat loss, the horizontal component of radiation can approach values used for spot heating.

This is shown in Fig. 3 in which the relationship between the heater input rates (Btu per hr per sq ft of floor) and equal air and unheated surface temperatures have been plotted (solid lines) for various heater radiant efficiencies. For example, entering at the left at an air temperature of 50 F and moving to the 60 percent efficiency curve, an input rate of 140 Btu per hr sq ft is required for comfort. This data assumes that the individual will be irradiated from at least two sides. That is, that two heaters having input rates of 70 Btu per hr per sq ft installed 180 degrees apart would direct radiation on the worker. These curves are based upon the data given in Table 1 and, therefore, are subject to the same limitations.

Superimposed upon these curves is another set of curves (dashed lines) which give the relationship between the installed heat input rate and the air temperature that will be maintained at various rates of calculated heat loss. It is assumed that design conditions are 70 F indoors and −10 F outdoors. In an actual case, the re-



3 RELATIONSHIP of heat input and air temperature for comfort is shown here as solid lines. Dashed lines represent temperature maintained in space at various rates of heat input for given computed rates of heat loss at 70 F indoors and −10 F outdoors. Intersection of solid and dashed lines for certain efficiency and heat loss indicate minimum heater capacity that can be expected to provide comfort. See text for further discussion

lationship between the heat input, calculated heat loss, and air temperature should take into account the internal heat load. This would in effect decrease the reduction in temperature for a given reduction in input.

The intersection of the appropriate heat loss curve and the temperature input curve at the radiant efficiency of the units installed gives the minimum capacity of radiation that would have to be installed for comfort heating of an entire plant. For example, in a building with an estimated heat loss of 160 Btu per hr per sq ft of floor (at an 80 F indoor-outdoor temperature difference) and a heater efficiency of 60 percent, the balance point occurs at an air temperature of 52 F and an input of about 125 Btu per hr per sq ft.

The radiation is assumed to be horizontal (and, therefore, perpendicular to the major portion of the surface area of the individual) and that the body is irradiated from two sides. In practice, the radiation enters the living zone at angles ranging from about 45 to 90 degrees from horizontal. Thus, the horizontal component of radiation is less than that taken into account in the curves for a given heater input. A higher input rate and a correspondingly higher control temperature will generally be required for comfort in practice.

Keeping in mind the limitations of the curves in Fig. 3, the following qualitative observations can be made:

1) As the heat loss per sq ft of floor area increases, a reduction of heater input can probably be made. However, high heat losses per sq ft will be associated with light construction, high infiltration rates, or large wall-to-floor area ratios. In such cases, the "reserve heating" offered by the difference between the direct radiation received by the body and that required when an air temperature of 70 F is automatically maintained will minimize the effects of drafts, and cold exposed wall surfaces.

2) The closer the installed input is to the minimum input indicated by the curves, the greater the dependence on direct radiation for comfort. Thus, the infrared units would have to be controlled in such a way that a portion of them operated continuously to provide just the required amount of direct radiation at any given outdoor temperature. Greater emphasis must also be placed in design on locating the units to provide uniform radiant intensities throughout the heated space.

To see what would happen if Fig. 3 is followed, consider the example given above (160 Btu per hr per sq ft heat loss, 125 Btu per hr per sq ft heat input). An air temperature of 70 F will be held until the outdoor temperature drops to about 10 F. Further reduction in outdoor temperature will cause the indoor temperature to drop. At −10 F outdoors the indoor temperature would be about 52 F. However, the heaters will operate continuously below 10 F and the direct radiation gains to the workers plus the re-radiation from floor, tools, etc. will provide adequate comfort.

Another consideration in reducing the air temperature, and thus the installed heat input rate is that the temperature of the floor, the material handled, tools, etc. will decrease. This will tend to eliminate one of the principal subjective reactions which has led to the acceptance of high intensity infrared heating — the warmth of everything touched.

Distribution of Units

Application begins with a conventional heat loss calculation for the space to be heated. This is used to determine the number of units required or the total input. For electric heaters and unvented gas-fired heaters, a utilization efficiency of 100 percent is assumed. Ventilation air is needed to assure removal of combustion products from unvented heaters. If it exceeds that supplied by infiltration or for other purposes it must be included in the estimated heat loss. For vented gas-fired heaters, a combustion efficiency of 80 percent is assumed.

Some differences in distribution of the units throughout the heated space are followed. In general, where the quartz lamp is used in electric infrared installations, the heaters are located to provide uniform radiation intensities throughout the space. This is in part prompted by the fact that useful light is generated by the lamp and uniform distribution of the lighting is usually advantageous. The vented gas heaters are generally located in a symmetrical pattern throughout the space unless cranes or other considerations preclude doing so. The unvented gas heaters are arranged for perimeter heating but units must also be located at interior locations to avoid uncomfortable radiation intensities at locations near the perimeter. Regardless of the general pattern of the units installed, it is desirable to consider the perimeter heat losses and that an individual in a perimeter location will more likely be subjected to drafts due to infiltration and will lose more heat by radiation to the cold surfaces. Thus, perimeter location of the units should be considered important and where possible units should be located between the individual and the perimeter.

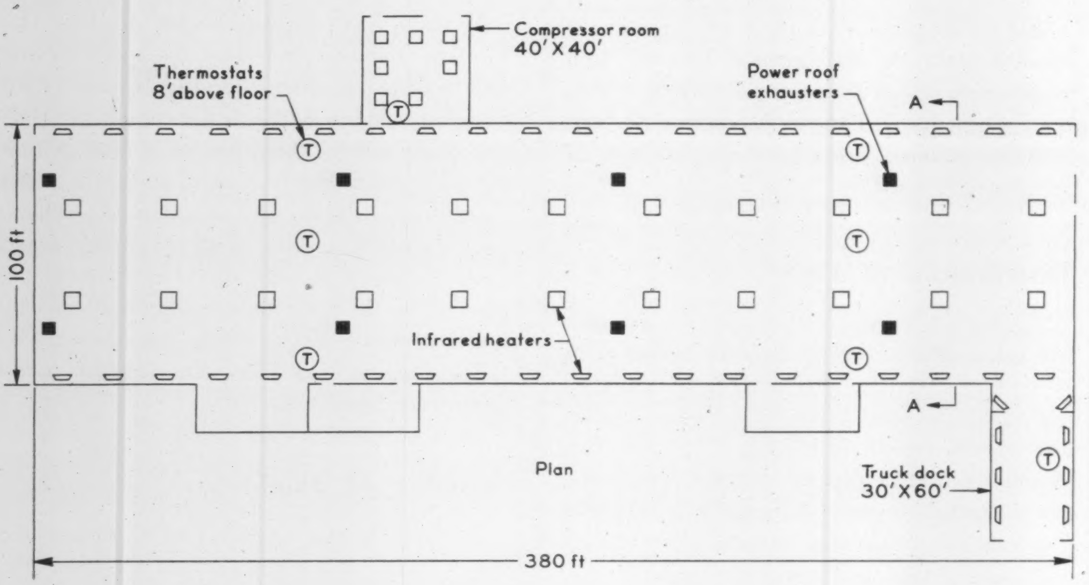
The importance of this was emphasized in one plant visited in which the work stations were located between the heaters and the exposed wall, which was comprised largely of glass. The windows immediately behind the work stations were boarded up from the inside to reduce infiltration which resulted in the complaints. The cold drafts that had been flowing in from behind the workers and their losses by radiation to the cold surfaces caused the unsatisfactory results. Location of the units near the perimeter would have eliminated the discomfort by warming the portion of the individual losing heat. In the center of this building, where workers were irradiated from both sides, the comfort conditions were satisfactory.

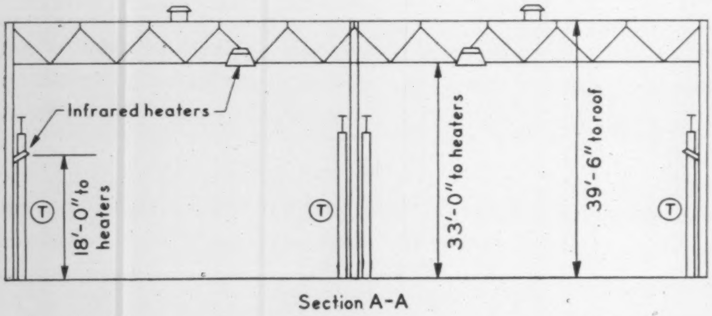
Avoid Cold Shadows

To properly heat a space, part of the infrared energy must reach the floor near the perimeter. If partitions, stored products, or other opaque structures are interposed between the radiant heater and the floor so that the floor is not heated, cold pockets of discomfort will result in an otherwise comfortable plant. This condition was observed in one plant where lockers in a wash room were so located with respect to the heaters that portion of the perimeter did not receive any direct radiation. Cold down drafts from the light steel exposed wall were trapped and complaints of discomfort were registered. In another situation, in which partitions were erected within a plant office space to form cubicles along the outside wall, similar experience was observed. In this case, air handling units were provided to increase room air motion to heat the cold areas by convection. Location of the infrared units to avoid absorption of the radiation by the partitions would have been a better solution. In the open area of the office, comfort conditions obtained without the need for air motion. The key then is to be sure that radiation reaches the floor and a part of the exposed wall when similar situations occur at the perimeter.

Concrete Floor "Flywheel" Effect

The flywheel effect of the concrete slab floor in an infrared heated space is appreciable. This heat provides quick recovery after sudden heat



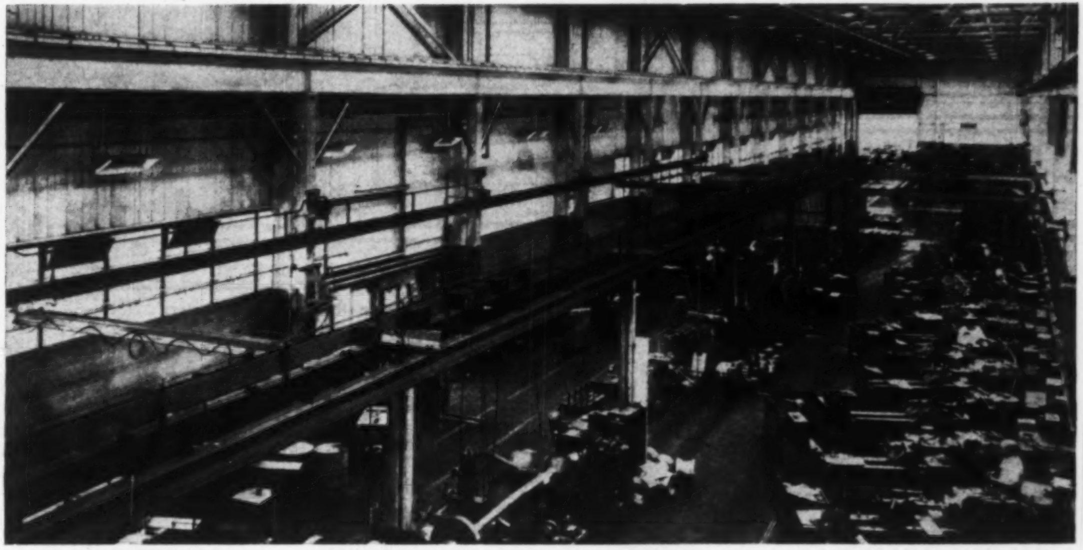


4 LAYOUT OF PLANT totally heated with unvented gas-fired infrared heaters is shown here. Power roof exhausters remove 150 cfm for each 48,000 Btu per hr input unit installed to remove products of combustion and provide combustion air. Units mounted over crane bay use deep reflectors to avoid radiation scatter that would heat upper wall sections. Note concentration of units in truck loading dock

losses incurred by opening large doors and does much to level the load on the heating system. The flywheel effect was observed in the system for which the floor plan is shown in Fig. 4. A photo of the interior of the plant is shown in Fig. 5. In this system, designed by R. Kay Crandall, chief mechanical engineer of McGeorge, Hargett and Hoag, the heat stored in the slab during periods of prolonged unit operation during decreasing outdoor temperatures returns to the space and contributes to overheating. It is estimated that approximately 50 percent of the heat stored in the slab returns by convection when the outdoor temperature begins to rise and the zone thermostats (sensing only plant air temperature) are satisfied. An experimental control system has been installed to control this flywheel effect. This experimental system uses an outdoor reset element to reset the indoor zone thermostat causing the infrared heaters to shut-off in advance of shut-off with the normal room thermostat. An additional sensing element is placed in the floor to determine when this heat source is exhausted and also its initial availability.

The estimated heat loss of this structure including all of the areas heated with infrared is 3,740,000 Btu per hr based on design temperature of 68 F indoors and −5 F outdoors. Walls are of stainless steel sandwich with 1½ in. of insulation and the roof is 4 in. precast concrete with ¾ in. of rigid insulation. The control temperature is 68 F. This setting was arrived at during the first season of operation and the thermostats were locked in this position.

The units installed have rated inputs of 48,-



5 PERIMETER gas-fired units are hung under crane rail to avoid interference. Photo shows interior of plant for which layout is given in Fig. 4. Note hoppers in top of sash through which ventilation air is brought into building. Incoming air is deflected upward in small streams to mix with room air to avoid drafts

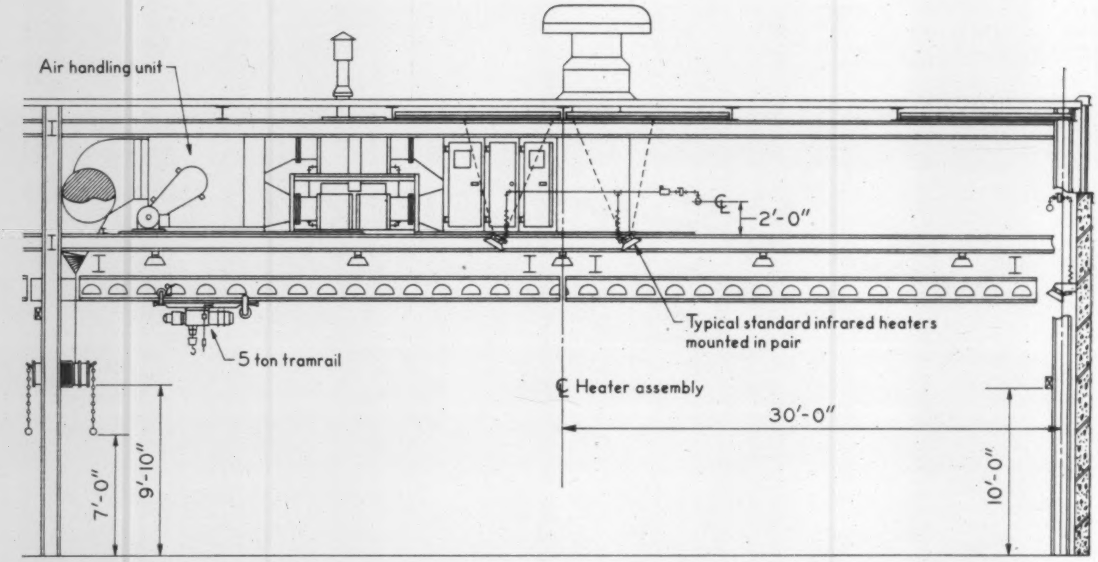
000 Btu per hr. The heaters are vented to the occupied space. Mechanical exhaust ventilation is provided to insure that the products of combustion are carried out of the plant. The ventilation system is sized to remove 150 cfm for each unit (48,000 Btu per hr capacity) installed. This is calculated to provide sufficient air to keep the concentration of carbon dioxide below the MAC value and to remove the water vapor discharged from the units with the products of combustion. It also insures an adequate supply of air for combustion. Intake vents for the makeup air are provided in the top of the window sash. Note the hoppers installed on the vents in Fig. 5. These direct the make up air upward into the space giving it time to be warmed before dropping into the occupied space. This system is considered satisfactory and has not resulted in complaints. However, it is planned to provide a different pattern of exhaust and supply ventilation when the building is expanded.

It will be seen on the plan view in Fig. 4 that the system has been divided into a number of zones. The thermostats for perimeter zones are mounted on columns along the outside wall. Those for the interior zones, which control the units mounted overhead, are mounted on interior columns. The units mounted near the roof are comprised of two small units placed side by side and thus have a capacity of 96,000 Btu per hr. The capacity of the units near the roof constitutes approximately one-half of the installed capacity in the high bay section of the plant. It is interesting to note that these have operated only rarely and that consideration is being given to utilize a part of them in another area when the plant is expanded.

Metered Fuel Use Less Than Estimate

The metered fuel consumption for the first full heating season (September 16 to May 10) in this plant was approximately 35 percent less than that predicted by conventional procedures assuming a utilization efficiency of 80 percent. If a utilization efficiency of 100 percent is assumed, the measured fuel consumption was about 18 percent less than that predicted by conventional means. Since the control temperature of 68 F was held constant during the entire heating season, the degree days for a 63 F base were used in predicting fuel consumption.

The installed cost of this system, which was



6 GAS-FIRED MAKEUP air unit and infrared heater locations are shown here in elevation view through zone shown in Fig. 7. Perimeter units are mounted on brackets permitting adjustment of angle between face of unit and floor from 0 to 30 deg. maximum permissible. Flexible tubing is used between gas piping and units to permit adjustment of heater angle. Heaters are mounted approximately 18 ft above the floor

completed in January of 1958, including the controls and mechanical ventilation was approximately $1.53 per sq ft. The system was installed on a cost-plus basis because the project was under contract when the system was designed.

Windowless Plant Infrared Heated

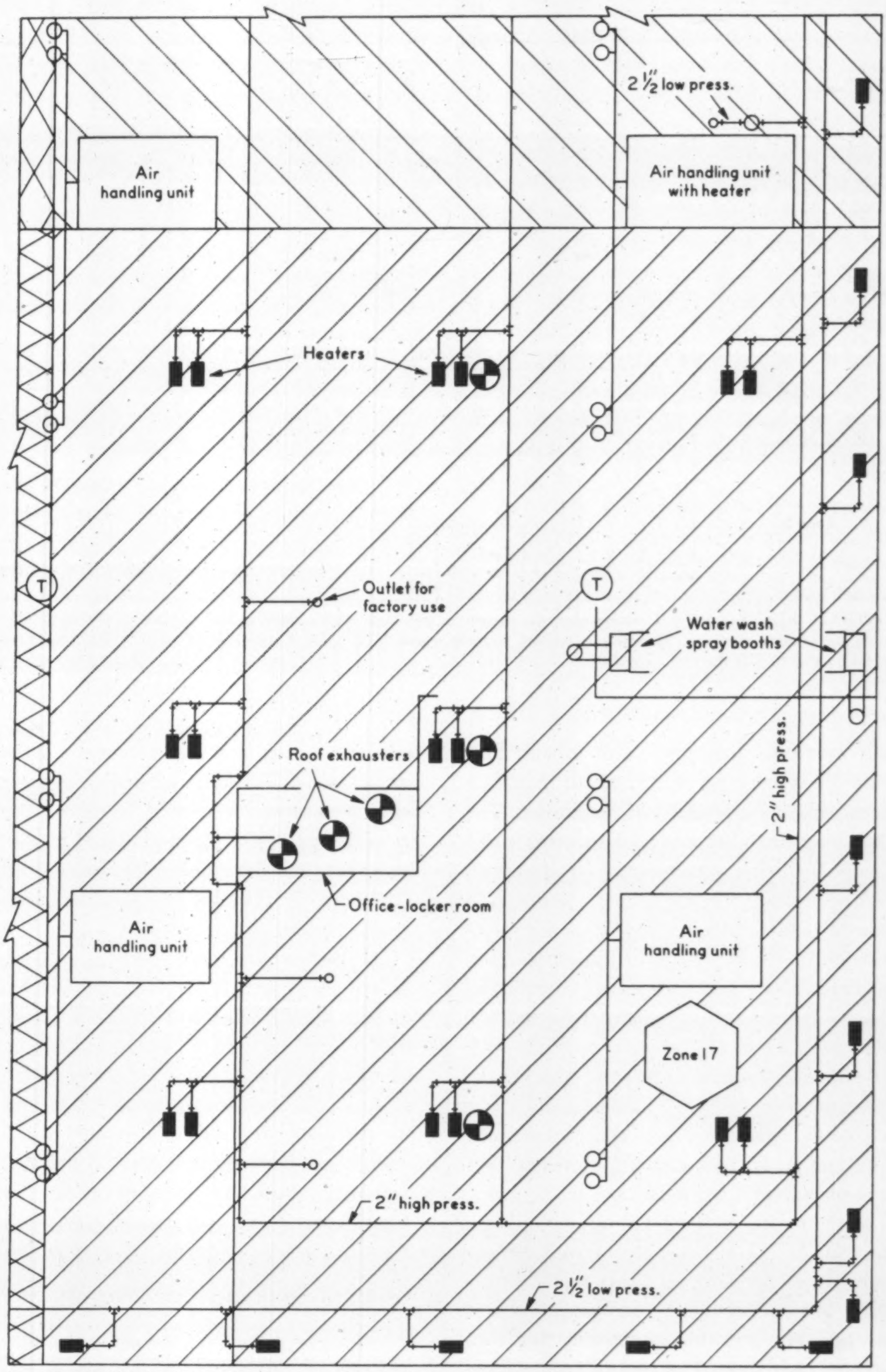
Based upon the performance of the system described above, Mr. Crandall designed an infrared heating system for a windowless plant with a floor area of 510,000 sq ft. Construction of the plant has not begun. The walls are of masonry construction and the roof is well insulated. The total estimated heat loss not including infiltration is approximately 9 million Btu per hr. The design infiltration load is 6 million Btu per hr but credit is taken in design for utilization of one-half of the building lighting load of 4½ million Btu per hr so the total building heating requirement is then estimated to be 13½ million Btu per hr.

Unvented gas-fired infrared heating units with rated input of 48,000 Btuh will be installed. The total heat input of the system equals the maximum computed heating requirement. No allowance is made for combustion efficiency since it is assumed that the entire input of the unvented heaters is used to satisfy the heating requirements.

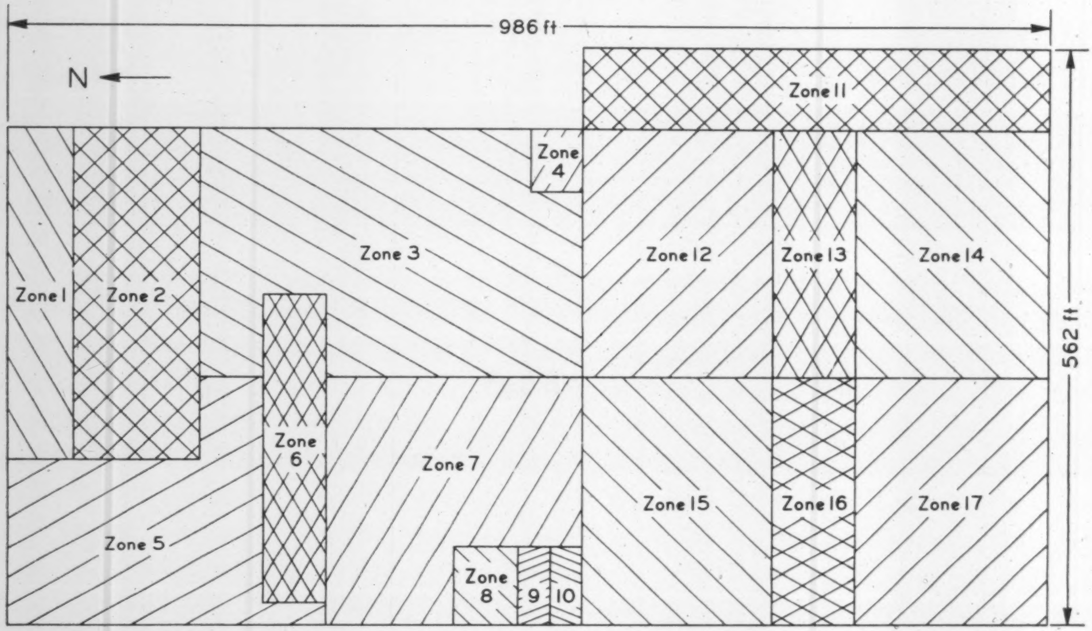
Summer ventilation is based on a maximum use of some 750,000 cfm of outdoor air supplied by 24 air handling units, located in the building trusses. The air is supplied at or below a 12 ft stratum line and exhausted through 49 roof mounted exhaust fans. The ventilation requirement of 150 cfm for each infrared unit installed is supplied by four of the air handling units. These are equipped with gas-fired heating elements to temper the outdoor air drawn in by these units as replacement air.

When the outdoor temperature is 25 F or below, all four makeup air units will operate to supply 120,000 cfm of outdoor air. When outdoor temperatures are between 25 and 50 F, only two will operate to provide 60,000 cfm of ventilation air. All 24 air handling units will operate when the outdoor temperature is 50 F and above during plant operation. The location of the infrared heaters and the ventilation system in a typical zone of the plant is shown in the elevation view in Fig. 6 and the floor plan of the same zone in Fig. 7.

During the course of the heating season, elec-


2 ½" low press.
Air handling unit
Air handling unit with heater
Heaters
T
Outlet for factory use
T
Water wash spray booths
Roof exhausters
2" high press.
Office-locker room
Air handling unit
Air handling unit
Zone 17
2" high press.
2 ½" low press.

7 INFRARED HEATER locations, ventilation air supply, and exhaust fan locations are shown here for typical zone in large plant totally heated with gas-fired infrared units. Low pressure piping includes lubricated plug valve at each heater, high pressure circuit includes lubricated plug valve and gas pressure regulator at each pair of heaters. Note that radiant intensity has been increased at corner. Total input of heaters in this zone is 1.3 million Btu per hr



8 OVERALL PLANT LAYOUT shows how the system in this plant with a floor area of 510,000 sq ft was divided into 17 zones for control purposes. Thermostats sensing ambient temperature control operation of units. Control temperatures range from 65 to 70 F in the various zones

trically interlocked, designed, roof exhaust fans operate in conjunction with the air handling units to remove the products of combustion. The air handling units are designed to provide the makeup air for the winter exhaust and enough more to pressurize the building to prevent infiltration of outdoor air. During the summer ventilation cycle other electrically interlocked exhaust fans operate with designated air handling units as a battery of two exhaust fans and one unit.

All winter and summer operating cycles of the ventilation system are automatically programmed by means of a pneumatic temperature control and programming system. A central control panel provides for indication of the operation of the individual air handling unit, also remote manual operation. The infrared heating system is also operated by a pneumatic control system. The infrared units are separated into zones (see Fig. 8) with an ambient type thermostat in each zone. The control temperatures vary from 65 to 70 F in the various zones. It is anticipated that interior zones will operate relatively infrequently and that the perimeter zones will cycle during most load conditions. As noted earlier, some difficulty has been experienced with overheating in periods of rising outdoor temperatures due to the heat stored in the concrete floor, and development of control methods is required to utilize the "flywheel" effect of the slab to best advantage.

The cost of the infrared heating system installed complete with piping and temperature controls will be about $0.20 per sq ft for this installation. The cost of the ventilation system (for year round ventilation) is $0.50 per sq ft. The difference in cost between this plant and the one described previously is attributed to the differences in computed heat loss. In this case the heat loss is 26 Btu per hr sq ft and for the first design about 76 Btu per hr sq ft.

Control Makeup Air Supply

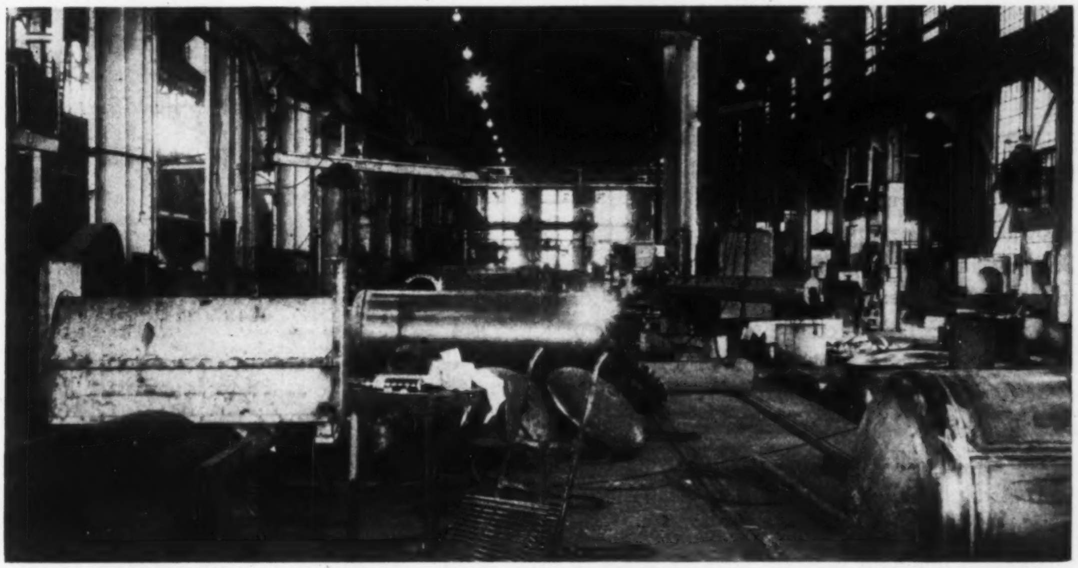
The two preceding designs illustrate two methods of providing makeup air in infrared heating installations. The necessary air supply for unvented heaters can also be provided by gravity vents. A word of caution about the location of intakes is in order. In the system shown in Fig. 5, outdoor air was admitted through small vents located in the steel sash. The incoming air streams were directed upward to provide adequate mixing and heating of the air to avoid drafts.

When relatively small amounts of ventilation air are required, this means of introducing the outdoor air appears to be satisfactory. The use of a few large openings located close to the floor should be avoided, however, to minimize local drafts and discomfort. When exhaust ventilation is required for the manufacturing processes, provision for makeup air must be made when using gas-fired heaters whether they are vented or not. This is necessary to insure that the products of combustion will be properly vented. Also, if provision for controlled addition of makeup air (either heated or unheated) is not made, air temperatures in areas subject to high infiltration rates will drop and uncomfortable conditions are likely to result.

Vented Heater Installation

An application of a vented gas-fired infrared heater is shown in Fig. 9. This installation is in a middle-Atlantic tank and iron fabricating plant. The plant was comprised of two work areas. The one shown is totally enclosed and constitutes three-fourth of the floor area heated. One end of the remainder of the plant is completely open to the outdoors. In this latter section, the total input was determined from empirical information relating comfort and density of radiation. The input to the enclosed portion was based upon the calculated heat loss of the space. These units, which radiate from both sides, are mounted from 10 to 15 feet above the floor depending upon the clearances required. The rated input of the individual units is 125,000 Btu per hr.

Each unit in this installation is equipped with a thermostat mounted on the under side of the heater. The thermostat is shielded from the direct radiation of the unit and essentially senses the temperature of the room air entering the combustion chamber with some effect of re-radiation from the warm floor and equipment below. A pilot generator provides the current to operate the gas valve. Thus, the units operate in a unitary fashion to offset the heat loss in each



9 VENTED GAS-FIRED infrared units are used in this welding shop of a tank and metal fabricating company. These units, which radiate from both sides, are usually mounted in a symmetrical pattern. In this case, they are mounted at the edges of the high bay areas to avoid interference with the overhead cranes. A reflecting shield is placed behind the unit in the right foreground to direct the radiation from the back side of the unit into the working area and to minimize heat loss through the exposed glass behind it. Each unit in this installation is equipped with thermostat mounted on the bottom of the unit. Operating current is provided by a pilot generator so units are self contained area. Units of the same kind are also controlled in groups in some installations by ambient thermostats.

Since these units radiate energy from both sides, they are usually installed in a symmetrical pattern when it is possible to do so. When placed adjacent to an exposed wall, as in Fig. 9, a reflecting shield (aluminum is usually used) is necessary to prevent high rates of heat loss through the irradiated wall. The shields are arranged to reflect the radiation into the work space.

Maintenance of Infrared Units

The maintenance required to assure proper operation of the infrared units will depend to some extent upon the nature of the manufacturing processes carried out in the heated space. Discussions with a number of people responsible for maintaining the units indicate that their experience is good. In general, the most frequent maintenance consists of cleaning the reflector surfaces to assure maximum efficiency of the units. The frequency with which the reflecting surfaces must be cleaned varies with the type of operation carried out in the heated space. For example, in a small plating plant, during six or seven years of operation the only service required was an occasional dusting of the reflector surfaces. In a light manufacturing plant, the units had not been cleaned in four years.

When operations produce dust or other solid contaminants, the burners in gas-fired units and the pilot may have to be cleaned occasionally to remove solids deposited from the combustion air. An annual inspection at the time the pilots are lit in the fall seems to be routine practice for the gas-fired units. When cleaning the combustion components, procedures recommended by the manufacturer should be followed to avoid damaging the burners or radiating elements.

Infrared Has Many Uses

Emphasis has been placed upon the use of infrared heating in industrial plants in this discussion. Installations have been made in many types of industrial plants and this represents their greatest application at present. However, infrared heating units are being applied for other purposes which are of interest and should be mentioned.

Snow melting is an interesting application of this method of heating which is worthy of note. Both electric and gas units have been used on store fronts and entrances to provide energy for snow melting. This offers a practical method of snow melting where replacement of an existing sidewalk to install an embedded piping system may not be practical.

The electric infrared units are also being used for heating occupied spaces such as gymnasiums. By proper design and control of the units, it is possible to maintain different comfort levels in the spectator and playing areas. Gas units have been used in similar spaces in some localities but local codes should be consulted before considering their use.

While infrared heating systems have many features which commend their use for comfort heating, as noted at the beginning of this report they will not solve every heating problem and they require intelligent design and application as do other systems. Properly applied they are a useful tool.

The editors gratefully acknowledge the assistance of the several engineers and organizations who provided much of the information on which this report was based. The photo for Fig. 1 was provided by Luminator, Inc.; photos for Figs. 2 and 5 and the floor plan of Fig. 4 were provided by the Infra-Red Dept., Perfection Division of Hupp Corp.; Figs. 6. 7, and 8 were provided by R. Kay Crandall of McGeorge-Hargett and Hoag; and the photo for Fig. 9 was provided by the Panelblot Division of The Bettcher Manufacturing Corp.

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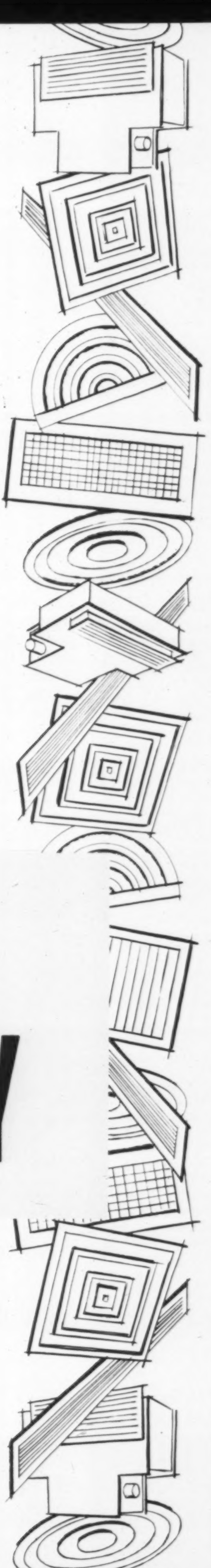

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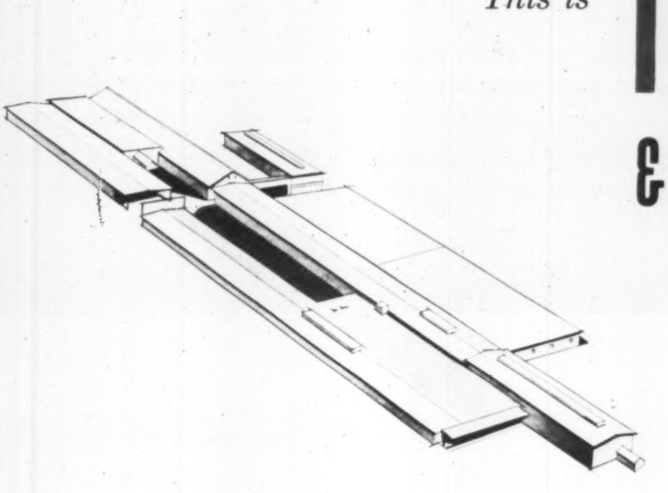

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c/o Kirk Cousart & Assocs.
Office No. 4—Waynick Bldg.
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Kirk Cousart & Assocs.
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P.O. Box 2155
Charlotte 1, N.C.

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Phelps Dodge Copper Tube for refrigerating, air conditioning and heating units!

1 Phelps Dodge has complete control of its copper tube from original source to finished product. The copper used in Phelps Dodge tube comes from Phelps Dodge-owned open-pit mines, is smelted in Phelps Dodge refineries and fabricated in modern Phelps Dodge mills. This overall Mine-to-Market control is assurance of highest quality and finest workmanship.

2 Phelps Dodge devotes particular attention, throughout fabrication, to uniform anneal for tube flaring and careful control of die draw for close tolerance.

3 Phelps Dodge can supply maximum tube lengths and precise wall thicknesses engineered to customer specifications; straight length tube tempered to meet bending and expanding requirements.

4 Phelps Dodge multiple mill operation guarantees a steady source of tube supply to meet the needs of manufacturers and distributors of refrigerating, air conditioning and heating equipment.

It's the famous Mine-to-Market Quality Line . . .
sold the quality way—through authorized wholesalers!

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PD

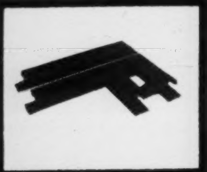
SERIES "A" MOUNTINGS

①

Deflections to 3"
Load Range 25# to 20,000#
Bulletin "A-10"

INTEGRAL FAN BASES

⑦



Deflections to 3" with
"A" or "C" Mounts,
to ½" with "R" Mountings
Bulletins AB-10,
AC-10-RB-10

SERIES RB RAILS

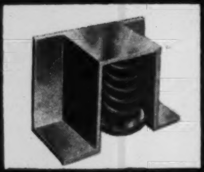
Deflections to ½"
Bulletin RB-10

SERIES RFP HOSE

Flexible Rubber Pipe
Bulletin RFP-10

SERIES "U" MOUNTINGS

②



Deflections to 3"
Load Range 25# to 2500#
Bulletin "U-10"

SERIES "C" MOUNTINGS

③

Deflections to 3"
Load Range 25# to 2500#
Bulletins "C-10", CD 10

SERIES "P" MOUNTINGS

④

Deflections to 6"
Load Range 400# to 20,000#
Bulletin "P-10"

SERIES "J" MOUNTINGS

⑤

Deflections to 3"
Load Range 400# to 20,000#
Bulletin "J-10"

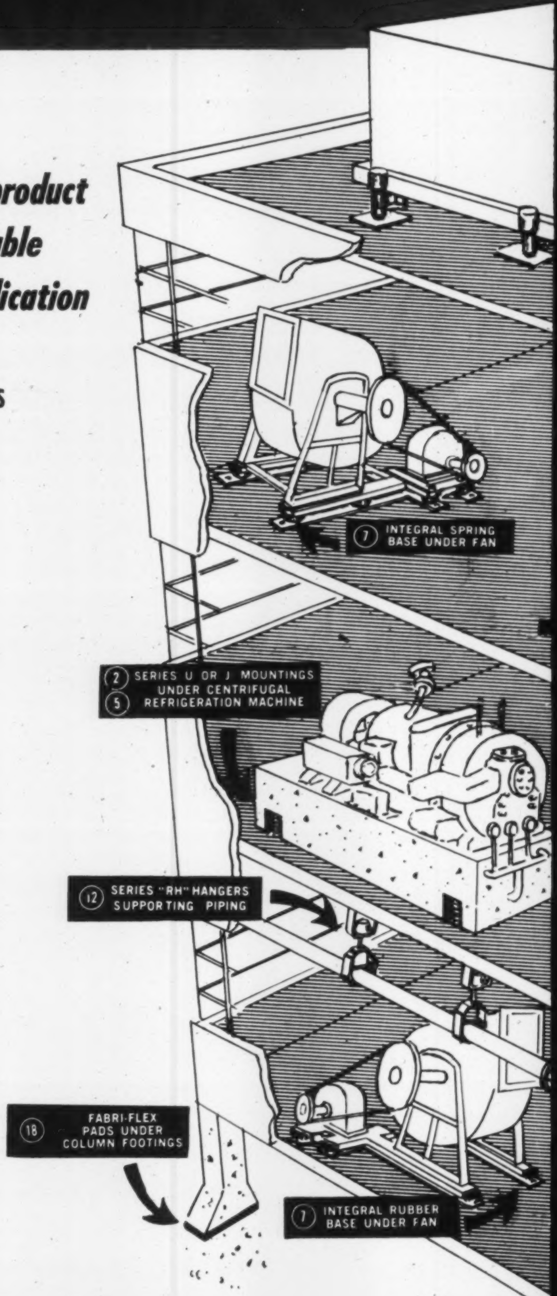
SERIES "R" MOUNTINGS

⑥

Deflections to ½"
Load Range 10# to 6000#
Bulletin R-11

vm has the right product for every Conceivable Vibration Control Application

- ABSORPTION MACHINES
- AIR CONDITIONERS
- AIR HANDLING UNITS
- BUILDING COLUMNS
- COMPRESSORS
- CONDENSERS
- COOLING TOWERS
- FANS
- HEATING UNITS
- PACKAGED BOILERS
- PIPING
- PUMPS
- STEAM GENERATORS
- TRANSFORMERS
- VENTILATING UNITS
- VENT SETS

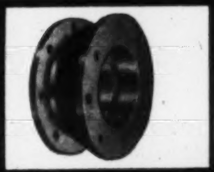

⑦ INTEGRAL SPRING BASE UNDER FAN
② SERIES U OR J MOUNTINGS UNDER CENTRIFUGAL
⑤ REFRIGERATION MACHINE
⑫ SERIES "RH" HANGERS SUPPORTING PIPING
⑱ FABRI-FLEX PADS UNDER COLUMN FOOTINGS
⑦ INTEGRAL RUBBER BASE UNDER FAN

WRITE FOR FREE VIBRATION CONTROL DATA BOOK

SERIES MFP HOSE

Flexible Metal Pipe
Bulletin MFP-10

SERIES "RXJ"



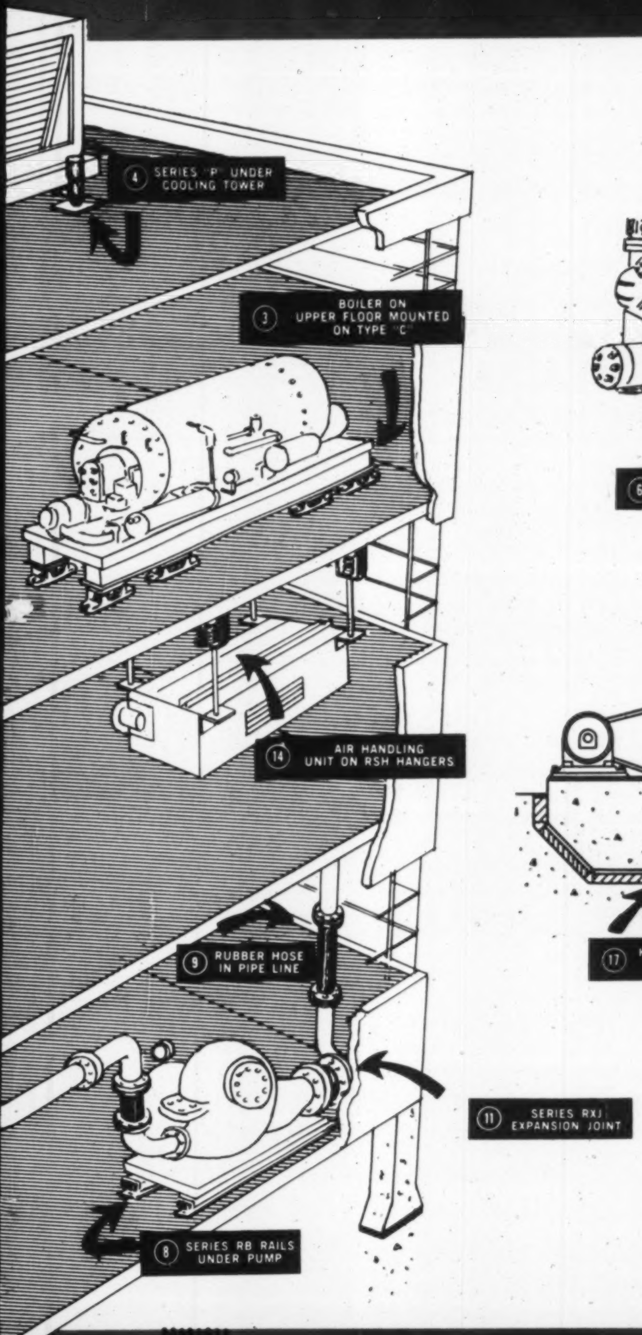
Rubber expansion joints
Bulletin RXJ-10

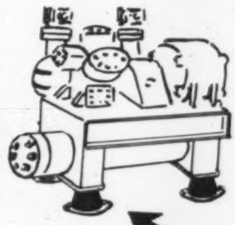
SERIES "RH" HANGERS

Deflections to ½"
Load Range 10# to 4000#
Bulletin RH-11

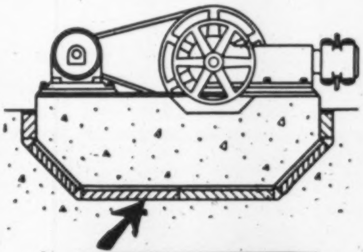
SERIES SH HANGERS

Deflections to 1¼"
Load Range to 2500#
Bulletin SH-10


4 SERIES "P" UNDER COOLING TOWER
3 BOILER ON UPPER FLOOR MOUNTED ON TYPE "C"
14 AIR HANDLING UNIT ON RSH HANGERS
9 RUBBER HOSE IN PIPE LINE
11 SERIES RXJ EXPANSION JOINT
8 SERIES RB RAILS UNDER PUMP



⑥ SERIES R MOUNTINGS UNDER COMPRESSOR

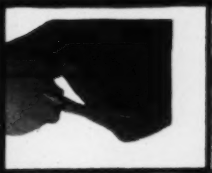


⑰ HORIZONTAL COMPRESSOR ON CORK FLEX

SERIES RSH HANGERS

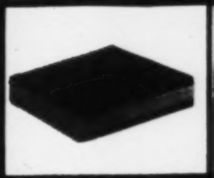
Deflections to 1½"
Load Range to 2500#
Bulletin RSH-10

SHEAR-FLEX PADS



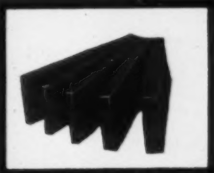
Deflection 1/16"
Load Range 25 to 100 P S I
Bulletin PT-11

[illegible] PADS



Deflection ⅛"
Load Range 25 to 60 PSI
Bulletin PT-20

CORK-FLEX PADS



Deflections to .25 inches
Load Range to 8500 P S F
Bulletin PT-30

FABRI-FLEX PADS

Deflections to ⅛"
Load Range to 1500 PSI
Bulletin PT-40

VIBRATION MOUNTINGS

AND CONTROLS INC.

98-21 50th AVENUE, CORONA, N. Y. Cable Address: W.U.X.

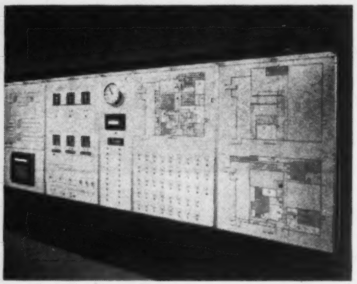
•

REPRESENTATIVES IN ALL PRINCIPAL CITIES – U. S. AND CANADA

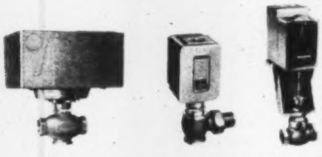
Undivided responsibility

"Electrionic" Controls

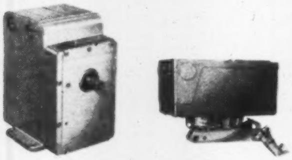
Barber-Colman manufactures a complete line of electric and electronic automatic temperature and humidity controls for commercial air conditioning, heating, ventilating, and industrial processing applications. Detailed literature and application diagrams are available upon request. Please state your specific interest.



"Electrionic" remote control centers

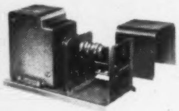


Motor-operated valves including transistorized types.

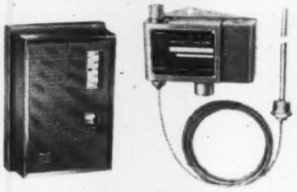


Precision motor operators, including transistorized types, for valves and dampers.

Unit ventilator controls that eliminate wall thermostats.



Sequence controllers to operate multiple switches.



Thermostats and humidistats for on-off and proportional control.

Only Barber-Colman offers you years of combined experience in both automatic controls and air distribution equipment and assumes undivided responsibility for delivering ideal indoor weather.

A nationwide sales and service organization provides experienced engineering recommendations, qualified supervision of installation, and prompt, competent field maintenance assistance on all types of jobs from the largest to the smallest. For telephone numbers, see the classified phone directories for the cities listed.

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Fresno, 1621 E. Belmont
Monterey Park, 750 Monterey Pass Road
Sacramento 17, 3730 Broadway
San Diego 1, 2311 Kettner Blvd.
San Francisco 3, 821 Howard St.

Colorado
Denver 21, 5750 Pecos Street

Connecticut
New Haven 3, 45 Bristol St.

Florida
Jacksonville 7, 806 Bugbee St.
Miami 33, 3356 Virginia St.
Tampa 11, 3309 S. W. Shore Blvd.

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Atlanta 9, 370 Trabert Ave.

Hawaii
Honolulu 17, 2026 Kalani St.

Illinois
Chicago 26, 6610-14 N. Sheridan Road
Loves Park, 515 Loves Park Drive
Rock Island, 1808 - 11th St.
Springfield, 2400 S. MacArthur Blvd.

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Fort Wayne, 2423 Broadway
Indianapolis 2, 1953 Central Ave.
South Bend, 709 S. Eddy St.

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Wichita 2, 434 N. Rock Island

Kentucky
Louisville 4, 1307 Bardstown Road

Louisiana
Baton Rouge, 4821 Laurel St.
New Orleans 19, 740 S. Lopez St.
Shreveport, 311 Gladstone Blvd.

Maine
South Freeport, Harraseeket Road

Maryland
Baltimore 1, 1012 Cathedral St.
Bethesda 14, 4960 Bethesda Ave.

Massachusetts
Springfield 1, 163 Stafford St.
Westwood, 32 Southwest Park

Michigan
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Detroit 2, 1120 W. Baltimore Ave.
Grand Rapids 3, 333 Fuller Ave., N.E.
Saginaw, 5975 Dixie Highway

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Minneapolis 2, 128 S. 10th St.

Mississippi
Jackson, 1104 Ellis Ave.

Missouri
Columbia, 119 S. 8th St.
Kansas City 11, 226 W. 39th St.
St. Louis 10, 2151 January Ave.

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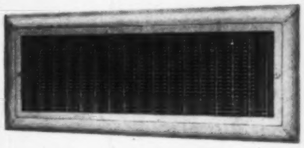
Albuquerque, 1609 Second St., N.W.

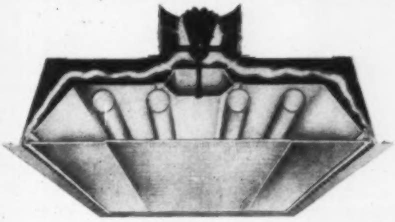
for ideal indoor weather

Engineered Air Distribution Products

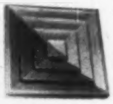
Barber-Colman manufactures a complete line of Engineered Air Distribution products for commercial and industrial air conditioning, heating, and ventilating applications. Detailed literature and complete laboratory-proved selection data is available upon request. Please state your specific interest.



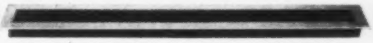
Sidewall diffusers with exclusive aspirating core design.



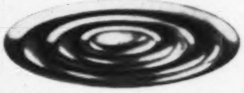
Combination troffer-diffuser—by Barber-Colman and Day-Brite.



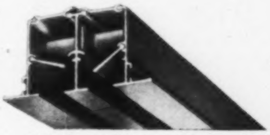
Square and rectangular ceiling diffusers with louver face design.



Continuous-line air diffusing grilles for ceiling, soffit, sill, and floor.



Round Venturi-Flo ceiling diffusers with adjustable controls.



New Control-Line ceiling and sidewall diffusers with air deflection and volume controls.

High-velocity single- and double-duct constant volume control and mixing boxes.

Square and rectangular ceiling diffusers with the original perforated diffuser plates.

BARBER COLMAN

BARBER-COLMAN COMPANY

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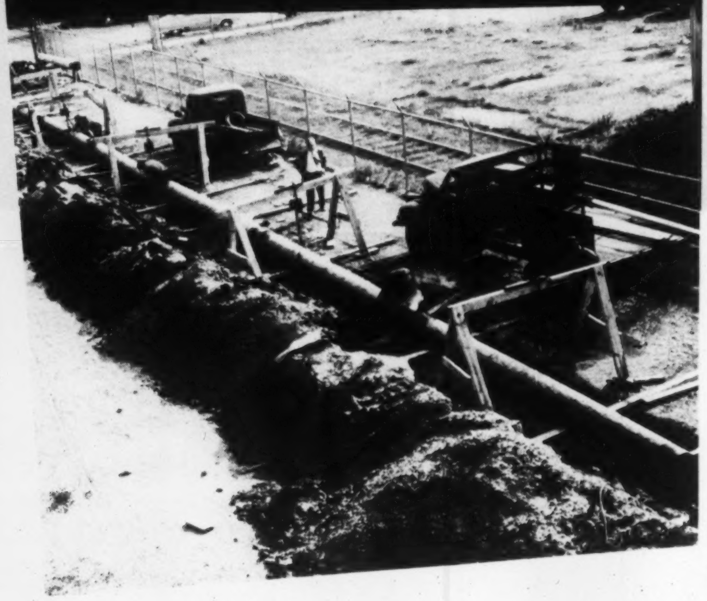
A 2% HEAT LOSS

can cost YOU $2,000 a month!



INSULATION
EFFICIENCY
COST REPORT

Report is based on actual calculations.

The illustrated Insulation Efficiency Report, is a cost comparison study of a Ric-wiL Underground Steam Distribution System vs. a competitive type system. The report is based on actual calculations, using the National District Heating Association's method for determining heat loss. The findings show a 2% heat loss that in one month can cost the owner $2,000.00 in increased steam cost.

The report is yours for the asking . . . and, if you do not already have a Ric-wiL Catalog, ask for a copy along with the report.

Quality Piping Systems . . .
. . . of Exceptionally High Thermal Efficiency

Ric-wiL PREFABRICATED **INSULATED PIPING SYSTEMS**

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WESTERN STATES: RIC-WIL INCORPORATED, WESTERN DIVISION, NEWARK, CALIFORNIA
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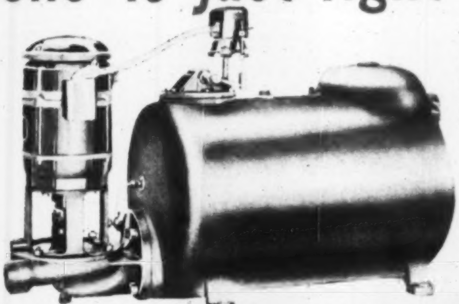
Specify Skidmore HEATING PUMPS

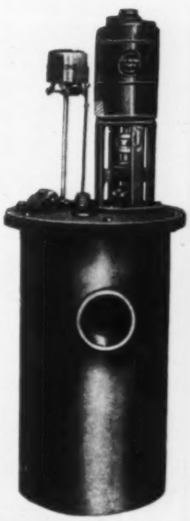
One is just right for your application



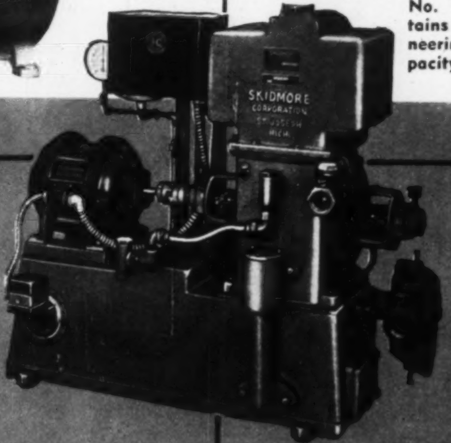
TYPE "VC" PUMP

TYPE "VC" PUMP — cast iron construction . . . low inlet connection easily accessible — capacities, 1,000 to 65,000 sq. ft. E.D.R. — discharge pressures from 10 to 75 lbs.

TYPE "UV" PUMP — designed for low return installations — featuring new wide range of sizes, capacities and pressures. Send for new bulletin No. 19-B which contains complete engineering data and capacity table.



TYPE "UV" PUMP



SKIDMORE VACUUM PUMP—SINGLE UNIT
(ALSO FURNISHED IN DUPLEX)

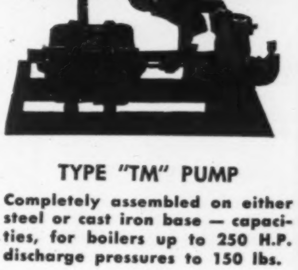
MAINTAINED EFFICIENCY
. . . automatically adjusts itself to the varying conditions.

Low return lines . . . reduces installation cost, often eliminating the necessity of a pit.

Capacity remains constant year after year . . . eliminates adjustments and costly repairs.

TYPE "HS" PUMP

Sturdily constructed for dependable service at small investment —capacities, 1,000 to 65,000 sq. ft. E.D.R. discharge pressures from 10 to 75 lbs.



TYPE "TM" PUMP

Completely assembled on either steel or cast iron base — capacities, for boilers up to 250 H.P. discharge pressures to 150 lbs.

TYPE "CCVS" PUMP — features close-coupled design and mechanical shaft-seal — single unit is built with 5, 10 and 20 gallon receivers. Send for new bulletin No. 21-C which fully describes both single and duplex units.

Send for bulletins on all Skidmore Pumps

SKIDMORE PUMPS

SKIDMORE CORPORATION ST. JOSEPH MICHIGAN

In Iron Body Wedge Gate Valves, Outside Screw and Yoke Design,

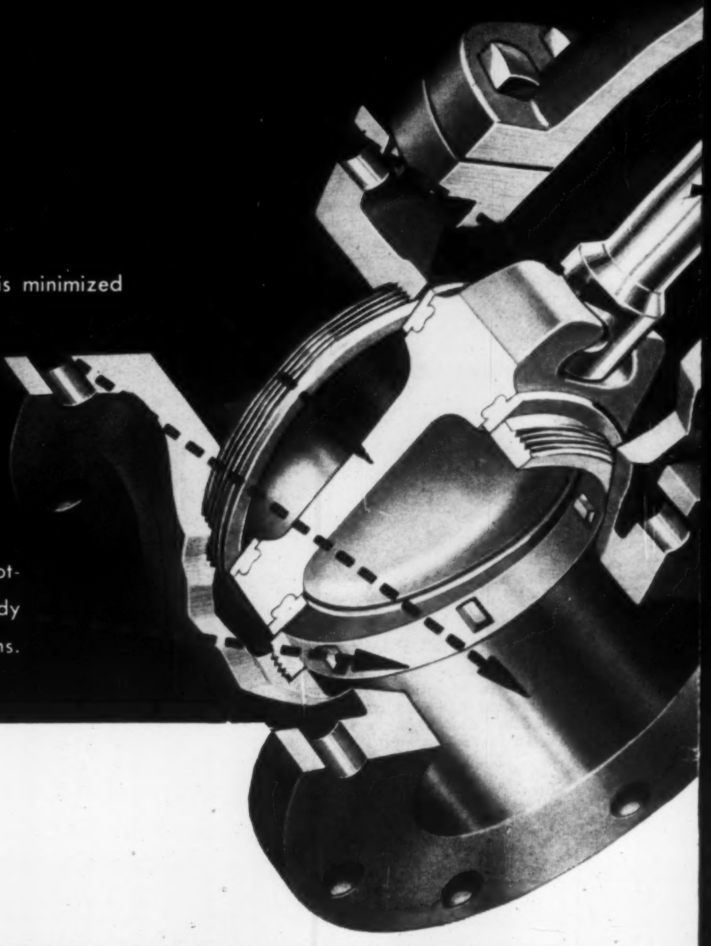
Walworth offers you these 8 outstanding advantages!

STRONGER CONNECTIONS. T-head disc-to-stem connection on OS&Y types permits wedge to properly seat itself.

TIGHTER SEAL. Solid web type disc on OS&Y valves provides tight closure, greater strength and longer service.

REDUCED TURBULENCE. Fluid action is minimized due to this straight-flow port design.

FEWER OBSTRUCTIONS. Seat rings of bottom-seated types are screwed into body to prevent gum and grit accumulations.



Walworth Subsidiaries: ALLOY STEEL PRODUCTS CO. · CONOFLOW CORPORATION · GROVE VALVE AND REGULATOR CO.

SURE-GRIP HANDWHEEL. Fluted design assures a sure grip, even with greasy gloves.

HIGH CORROSION RESISTANCE. Brass liner protects glands from deterioration and scoring.

EASIER REPACKING. Hinged gland eye-bolts on OS&Y valves permit fast maintenance under full pressure.

LESS DAMAGE. Bronze back-seat bushing in bonnet of OS&Y valves prevents scoring, guides stem accurately.

Walworth Iron Body Gate Valves are available with screwed or flanged ends, in sizes and types for every purpose. For full information see your Walworth Distributor or write: *Walworth Company, 750 Third Avenue, New York 17, N. Y.*

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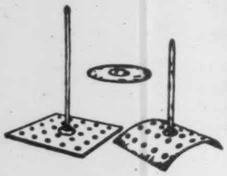
M & H VALVE & FITTINGS CO. • SOUTHWEST FABRICATING AND WELDING CO., INC.

For Economical Installation
Use Miracle Surface Anchors and Miracle Adhesives

■ adhesive applied Miracle Surface Anchors

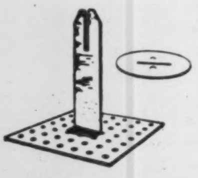
Miracle Surface Anchors provide firm, positive support for block, fibrous glass, and board types of insulation, furring strips, wood sills and headers, conduits, pipes, fixtures, etc., on all types of clean, rigid structural surfaces. These clips also provide anchorage in otherwise inaccessible locations. Miracle Surface Anchors consist of perforated metal plates 2" x 2" or 2¾" x 2¾" to the center of which is welded a spindle, prong, nail, bolt or threaded stud; selection depends upon the material and load to be supported. The perforated base is designed to provide anchorage by bonding it to masonry, metals, plaster, tile, glass, etc., with Miracle Anchor Adhesives which are manufactured in various formulations to meet job requirements. Consult your local Miracle representative for details covering any special installation.

description



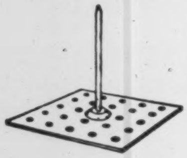
Spindle Anchor and Washer

For bonding cork, fibrous glass batts, thermal cellular glass, mineral wool, etc., to ducts, walls and ceilings.



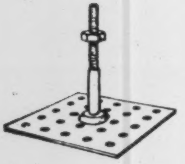
Pronged Anchor and Washer

For bonding block insulation such as thermal cellular glass to ducts, walls and ceilings. Pronged Anchors are set between rows of block insulation and prongs bent in reverse direction over blocks.



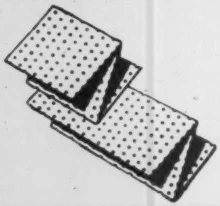
Anchor Nail

For bonding furring strips to masonry walls for the attachment of wallboard.



Anchor Bolt

For attaching cabinets, towel, tissue and other types of dispensers to tile or other rigid surfaces.



Z Clip

A self furring clip for attaching wallboard, plasterboard, insulation board, etc. to exterior walls when an air space is required.

■ direct adhesion

The following list of adhesives, sealers, and coatings has been developed for both on-the-job and production line applications. They may be applied by trowel, brush, spray and roller-coating.

type M	For bonding corkboard to submarine and ship hulls. Meets U.S. Navy Spec. MIL-A-18065
type AA	Anchor Adhesive for bonding Miracle Surface Anchors to metal or masonry walls, ducts, etc. Service temperature range −30° to +180°F.
HT 4620	Anchor Adhesive for bonding Miracle Surface Anchors on overhead installations and where heat resistance higher than AA is required. Service temperature range −30° to +225°F.
ER 475	2 part Anchor Adhesive for bonding Miracle Surface Anchors where highest heat resistance is required. Service temperature range −30° to +325°F.
PF 42	For bonding low density fibrous glass, sheet cork, Asphalt impregnated pads, mineral wool, aluminum foil—also for bonding woven asbestos cloth to ducts and blanket type lightweight insulation in metal buildings
PF 52	For bonding low density fibrous glass, mineral wool, vapor barrier paper—longer open time than PF 42
PF 62	For bonding blanket type fibrous glass to metal ducts and surfaces—high heat resistant
PF 78	General purpose high heat resistant adhesive for bonding fibrous glass.
PF 122	For bonding medium density fibrous glass and corkboard to metal, wood, masonry, also as sound deadener for sheet metal
PF 232	For bonding high density fibrous glass, wool batts, sheet-cork. Non-flammable emulsion type adhesive
MF 22	For bonding fiberboard, corkboard, expanded plastic insulating materials, etc. to any structurally sound surface. Also for insulation and vapor barrier materials to metal or concrete roof decks.
LT 153	For bonding fiberboard, corkboard, etc. to metal or masonry in cold room applications. Low cold test
PS 82	For bonding expanded plastic foam type insulation. Approved by Dow Chemical Co. for bonding Styrofoam.
RT 1000	Two part rubber latex type adhesive used for bonding Styrofoam insulation. Approved by Dow Chemical Co.
FO 409	Cold Setting mastic to replace hot asphalt mopping on the back of cellular glass insulation when placed in ceiling forms with Miracle Surface Anchors before pouring concrete.
ER 428	Epoxy Resin 2 part material for bonding aluminum honeycomb to glass, metal, asbestos board, etc.
CA 30	Contact Type Adhesive for bonding paper honeycomb to glass, metals, asbestos board, etc.
CA 40	Coaltar epoxy combination for sandwich panel construction.
L 2000	For laminating foil, vinyl, asphalt impregnated paper to low density fibrous glass.
FO 400	Flexible sealer for setting cellular glass.

Miracle coatings and sealers for insulation

primer	For priming metal or masonry surfaces also as a vaporseal and/or waterproofing coat
SF 313	Vapor barrier coating for molded fibrous glass—also adds to structural strength.
SF 466	On-the-job sealer to bond white wrap-around vapor barrier paper on molded fibrous glass pipe insulation
SF 209	On-the-job sealer to bond black wrap-around vapor barrier paper on molded fibrous glass pipe insulation
NP 555	Joint sealer for high velocity ducts
NP 617	Joint sealer for high velocity ducts

MIRACLE ADHESIVES CORPORATION

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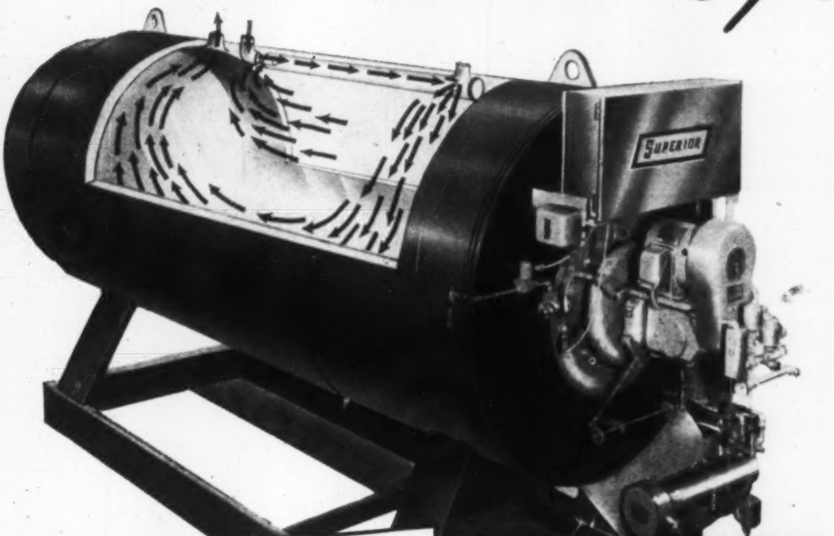
BELLMORE, LONG ISLAND, N. Y.

Designed specifically for **Hot Water** *Operation*



with...

Venturi-Action Mixing-Tube

Venturi-Action Mixing Tube
plays a triple role:

1 It starts by mixing entrained water from the boiler with water entering the boiler.

2 Traveling through the tube, temperature is further modified by the surrounding water.

3 Jet action at the end of the tube directs flow downward and outward against the outer confines of the shell, providing a circulation pattern unequalled in any other hot water boiler.

SUPERIOR "TYPE CC"

This new Superior Hot Water Boiler eliminates the problems resulting from the use of steam boilers for hot-water heating. Most of these stem from improper circulation within the boiler.

Its newly designed Venturi-Action Mixing-Tube achieves a more effective use of the natural flow pattern for maximum efficiency in hot water heating.

In addition to its special hot-water design, features include 4-pass down-draft design, 5 sq. ft. of heating surface per bhp., built-in induced draft, fully automatic operation firing gas, oil or both, and a host of other features described in detail in the new catalog illustrated at left.

For sizes to 11,720,000 Btu's/hr., write for catalog CCW-14.
For sizes to 20,100,000 Btu's/hr., write for catalog CFW-14.

Fire-Tube and Water-Tube PACKAGED BOILERS
for STEAM or HOT WATER
SUPERIOR COMBUSTION INDUSTRIES INC.
TIMES TOWER, TIMES SQUARE, NEW YORK 36, N. Y.

SUPERIOR
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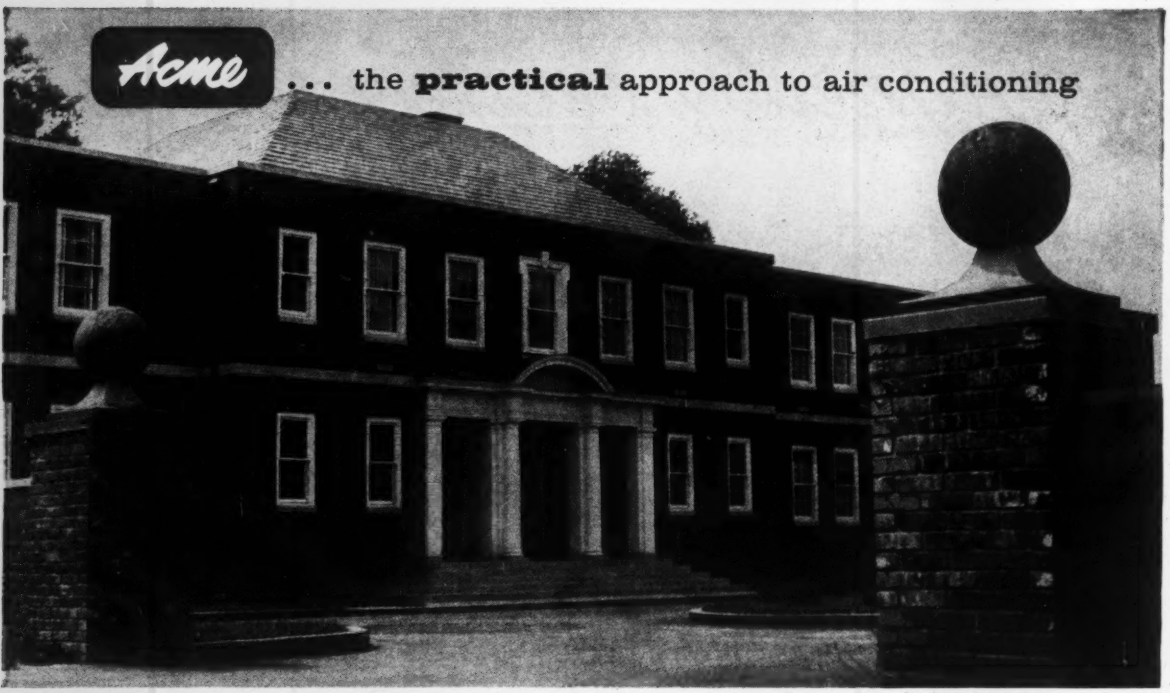


Architects, Nevin & Morgan, Louisville

Acme... saves on installation ...cuts down on running costs

Resounding is the only word for the chorus of "ayes" in favor of the Acme air conditioning system now comfort cooling the Carver School of Missions & Social Work at the Southern Baptist Theological Seminary, Louisville, Kentucky.

Roy B. Sanders, mechanical contractor, is an old "Acme hand", having installed Acme units in the Kentucky State Police Barracks and Municipal Building, Frankfort General Hospital, Louisville, in addition to this job. And according to Roy "Acme is outstanding because it comes in smaller packages than any other equipment of comparable efficiency . . . it's simple to handle, simple to install. In fact, counting materials and man hours, Acme saves me about 10% on installation."

E. R. Ronald, consulting engineer, states "Acme equipment easily fits the architectural specifications we have to follow and we consider it the equal of any more publicized unit in the country."

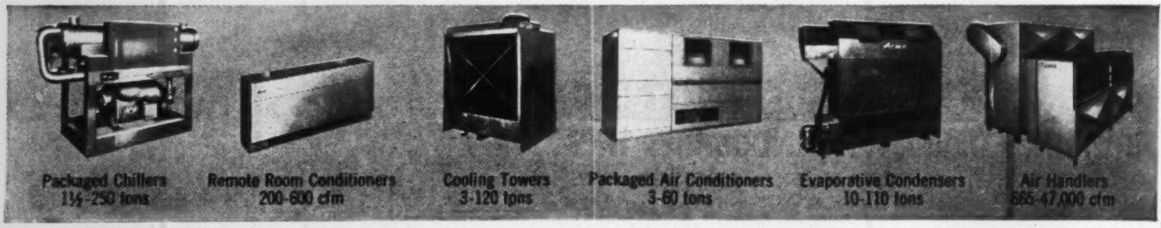
And the end consumer? Michael L. Speer, Director of Administration for the School says "*Acme couldn't be surpassed for a private institution* such as Carver School. It supplies a maximum of comfort with a minimum of operation. It cuts down on running costs."

Why not join the ranks? There's an Acme sales engineer near you who'll be happy to "sign you up".

Acme INDUSTRIES, INC.

JACKSON, MICHIGAN • GREENVILLE, ALABAMA

MANUFACTURERS OF QUALITY AIR CONDITIONING AND REFRIGERATION EQUIPMENT SINCE 1919



Packaged Chillers 1½-250 tons — Remote Room Conditioners 200-600 cfm — Cooling Towers 3-120 tons — Packaged Air Conditioners 3-60 tons — Evaporative Condensers 10-110 tons — Air Handlers 665-47,000 cfm

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Some Straight Talk On Steam Trap Capacity

... or pulling away the curtain of confusion that surrounds steam trap capacity ratings.

Unfortunately, for the steam trap buyer, the subject of steam trap capacity has become cloudy and confused by a landslide of claims, counterclaims and inconsistent "standards" for measurement. So let's take a cold hard look at this subject so vital to the efficient operation of your plant.

What Determines Steam Trap Capacity?

There are three factors that determine the capacity of a steam trap:

1. The area of the orifice.
2. The density of the condensate.
3. The pressure differential across the trap.

Let's take a closer look at each of these:

Area of orifice is usually specified by the trap manufacturer or can be calculated from the diameter. Nothing complicated here.

Density of condensate depends on temperature. A cubic foot of cold water weighs 62.4 lbs. At 250° F. or 15 psi, it weighs less than 59 lbs. This is important. Don't overlook it.

Pressure differential across the trap is most significant. And it is complicated by the many factors that affect it, such as:

1. Pressure drop between unit drained and the trap when the trap valve is open.
2. Distance the trap valve is moved from the valve seat.
3. Back pressure on the trap with orifice closed; i.e., return header pressure.
4. Increase in back pressure produced by condensate and flash steam flowing in the discharge line. This in turn is affected by the diameter and length of the discharge line, plus friction caused by valves and fittings.

Orifice Capacity Vs. Steam Trap Capacity

Figure 1 shows a ½" diameter sharp-edged orifice at the end of a pipe filled with cold water at 15 lbs. pressure. The capacity of this orifice, using a .61 coefficient of flow would be 8,800 lbs. per hr. Now, would this ½" orifice if used in a ¾" steam trap installed as shown in Figure 2 provide the trap with a continuous discharge capacity of 8,800 lbs. of hot condensate per hour? The answer is "no". And here are some of the reasons why:

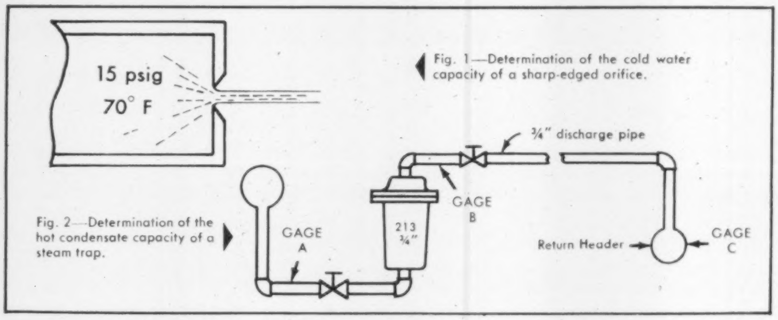


Fig. 1—Determination of the cold water capacity of a sharp-edged orifice.

Fig. 2—Determination of the hot condensate capacity of a steam trap.

Density of condensate. As pointed out above, cold water weighs 62.4 lbs. per cu. ft. At 15 lbs. pressure and 250° F. water weighs less than 59 lbs. per cu. ft. This difference in density alone reduces the lbs. per hour capacity of the orifice by over 5%.

Pressure differential across the trap. With the trap valve closed we have a static pressure differential of 15 psi. The trap valve must be able to open against this pressure. However, this is not the pressure differential that will determine the capacity of the trap valve.

The ¾" discharge line will be full of a mixture of flash steam and condensate. To keep this mixture flowing from the trap outlet to the return line requires a pressure differential. In actual capacity tests run as shown in Figure 2 Gage B at the trap outlet registered 11 lbs. back pressure. Thus the true pressure differential across the trap was about 4 lbs. Under these conditions the measured capacity of the trap was 4,340 lbs/hr. or just about half of the capacity of the ½" orifice for cold water.

How Armstrong Determines Capacity Ratings

Armstrong trap capacity ratings are based on hundreds of tests under actual operating conditions. In these tests, the condensate used was at the steam temperature corresponding to the test pressure. Thus, the capacities determined take into account the pressure drop that occurs when the trap orifice opens and the choking effect and back pressure of the flash steam. Actual installation hook-ups were used so that pipe friction in both inlet and discharge lines as well was reflected in the results.

Let's go back to the example cited above and in Figure 2. The trap referred to is an Armstrong No. 213. While it did test out at 4,340 lbs. per hour for a static pressure differential of 15 psi, it is rated in the catalog at only 3900 lbs. per hour for this pressure—just to be on the safe side.

For the trap buyer, this means that Armstrong Steam Trap capacities are based on handling condensate at steam temperature for the stated static steam pressure differential under actual working conditions.

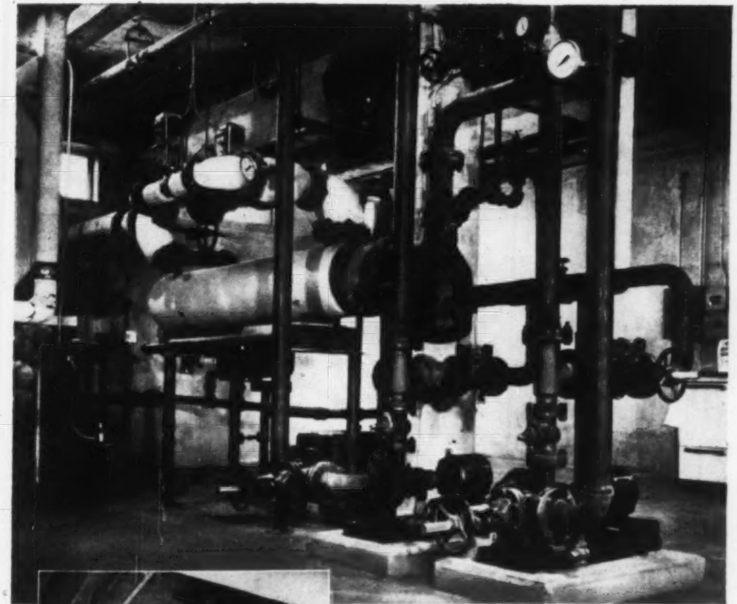
Capacity ratings which don't take into account all of the variables will be misleading and may lead to the selection of undersized traps. So whenever you specify or buy traps be sure that the capacity ratings you work from are realistic. One way to be sure is to select Armstrong Traps with *guaranteed* capacity ratings.

* * *

Additional information on trap capacity ratings, plus data on how to correctly size, install and maintain steam traps for any pressure, any temperature and any load, are presented in the 48-page Armstrong Steam Trap Book. Ask your local Armstrong Representative for a copy or write:

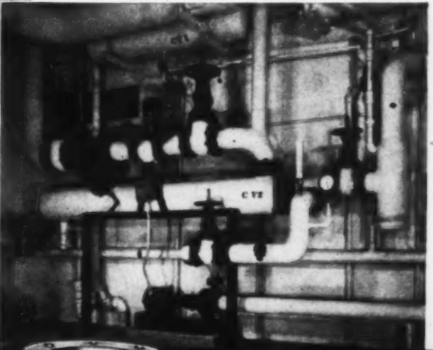
Armstrong Machine Works
8741 Maple Street
Three Rivers, Michigan

ARMSTRONG STEAM TRAPS



▲ Type "SU" Heat Exchanger used to heat convectors for faculty rooms, Loyola Academy, Chicago

◀ "SU" installed to heat swimming pool shower water, Loyola Academy



▶ This "SU" is used to furnish supplemental heat to a warehouse and shipping room area at Avon Products Inc., Morton Grove, Ill.

FOR ECONOMICALLY HEATING WATER WITH STEAM

TYPE "SU" HEAT EXCHANGER

B&G Type "SU" Instantaneous Heat Exchangers are designed to heat water or other liquids with steam and can be connected to any steam boiler or system.

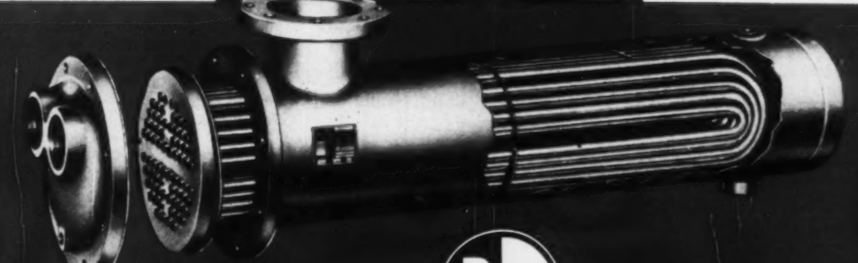
An "SU" provides an efficient low cost method of heating water for apartment buildings, hotels, hospitals, schools, industrial and processing plants. Comparatively small units produce large volumes of hot water—no storage tank needed.

In buildings where steam is required for process use, the advantages of a forced hot water system can be obtained by installing an "SU" Heat Exchanger instead of an extra boiler. These heaters also have many applications in vertically zoning large hot water heating installations to avoid high static heads.

With each B&G "SU" Exchanger, a Manufacturer's Data report for Unfired Pressure Vessels, Form No. U-1 as required by the A.S.M.E. Code rules, is furnished. This form is signed by a qualified inspector, holding a National Board Commission, certifying that construction conforms to the latest A.S.M.E Code for unfired pressure vessels. The A.S.M.E. "U" symbol is stamped on each exchanger.

For complete information send for "SU" Catalogs No. SC-159 and SI-159.

TYPE "SU"
INSTANTANEOUS
WATER HEATERS
DOMESTIC WATER



The A.S.M.E. "U" symbol is stamped on each Type "SU" Heat Exchanger.

B&G

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JENKINS PRACTICAL PIPING LAYOUT

84

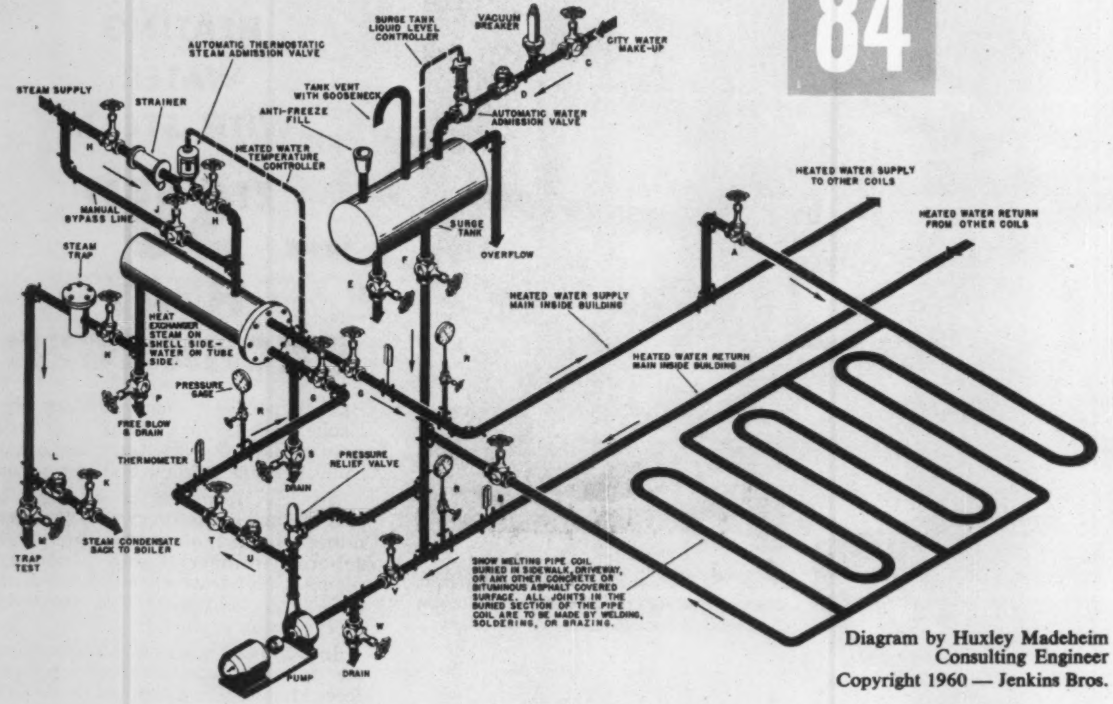

AUTOMATIC THERMOSTATIC STEAM ADMISSION VALVE
SURGE TANK LIQUID LEVEL CONTROLLER
VACUUM BREAKER
CITY WATER MAKE-UP
C
D
STEAM SUPPLY
STRAINER
TANK VENT WITH GOOSENECK
ANTI-FREEZE FILL
AUTOMATIC WATER ADMISSION VALVE
H
HEATED WATER TEMPERATURE CONTROLLER
HEATED WATER SUPPLY TO OTHER COILS
HEATED WATER RETURN FROM OTHER COILS
MANUAL BYPASS LINE
J
H
SURGE TANK
OVERFLOW
STEAM TRAP
A
E
F
HEATED WATER SUPPLY MAIN INSIDE BUILDING
HEAT EXCHANGER STEAM ON SHELL SIDE-WATER ON TUBE SIDE.
N
R
HEATED WATER RETURN MAIN INSIDE BUILDING
PRESSURE GAGE
P
G
G
FREE BLOW & DRAIN
R
L
THERMOMETER
S
PRESSURE RELIEF VALVE
DRAIN
R
B
K
M
STEAM CONDENSATE BACK TO BOILER
TRAP TEST
T
U
V
SNOW MELTING PIPE COIL BURIED IN SIDEWALK, DRIVEWAY, OR ANY OTHER CONCRETE OR BITUMINOUS ASPHALT COVERED SURFACE. ALL JOINTS IN THE BURIED SECTION OF THE PIPE COIL ARE TO BE MADE BY WELDING, SOLDERING, OR BRAZING.
W
PUMP
DRAIN

Diagram by Huxley Madeheim
Consulting Engineer
Copyright 1960 — Jenkins Bros.

How to plan piping connections for a SNOW MELTING SYSTEM

For controlled melting of snow and ice, use of a warm fluid circulating in pipe coils buried in paving material is rapidly expanding. Piping may be steel, wrought iron, brass or copper depending on conditions.

Conditions encountered in the specific installation should dictate details of construction, so the layout shown here cannot represent necessarily correct installation practice for every job. Some factors to be considered are severity of snowstorms, prevailing temperature, speed of removal desired, heat sources available, heat losses, hydraulic requirements.

Hydraulic requirements are determined by the amount, size and arrangement (sinuous or grid coils) of pipe as they determine size of circulator or pump. Regardless of type of pipe circuit, friction loss should be kept as nearly equal as possible between all circuits, and when necessary to obtain approximately the same pressure drop to each circuit, valves or balancing cocks are recommended.

The heat required varies with conditions but an output of 100 to 200 BTU per hr. per sq. ft. of surface has been adequate for most installations. In addition to heat output at surface, there should be an allowance of 30 to 50 per cent for back and edge losses, this being related to amount of insulation and cycle of operation as well as to fuel costs.

Air pockets or collections in the system should be avoided, and where grading conditions require different parts of pipe system to be pitched in different directions, it may be necessary to provide air vent lines from high points of pipe loops and carry vent lines to air vent valves in a curb box.

Drains are generally provided at low points for draining coils if required although annual drainage is not necessary.

As a snow melting system is fundamentally a forced circulation hot-water system, most standard practices for a hot-water system may be followed in the boiler or heat exchanger hook-up.

The system shown here uses steam heated hot water at 212°F., to which is added conventional ethylene glycol anti-freeze and a rust inhibitor.

The expansion or surge tank should be of generous size because of the greater expansion properties of water containing anti-freeze. The tank not only serves to liberate air and provide for expansion but also allows for initial filling and subsequent addition of water and anti-freeze. Its provisions should meet all code requirements including a guarantee against contamination of city water supply by a treated liquid.

Jenkins Fig. 106-A screwed end bronze globe valve, (or equivalent Fig. 1270 with socket ends, or Fig. 1270 with solder ends), is used extensively throughout this layout. Its renewable disc assures drop-tight closure, and it has many other design and construction features which mean economical maintenance and long, trouble-free life. Valves should be packed with solvent resistant packing. Disc type valves should have Teflon discs.

To assure efficiency in the job when planning any major piping installation, consult with accredited piping engineers and contractors, and select your valves from the Jenkins Catalog.

Enlarged diagram and full description of this layout No. 84 free on request to Jenkins Bros., 100 Park Ave., N. Y. 17.

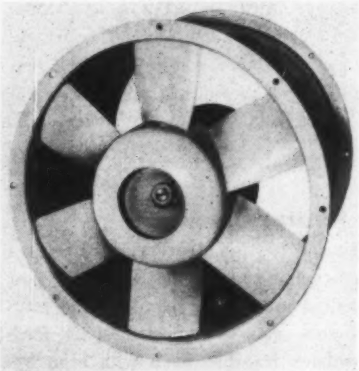
CODE	QUAN.	JENKINS VALVE	SERVICE
A	1 per coil	Fig. 47-U, Bronze Gate	Coil Shutoff
B	1 per coil	Fig. 106-A, Bronze Globe	Regulate Flow Thru Coil
C	1	Fig. 106-A, Bronze Globe	Regulate and Shutoff City Water
D	1	Fig. 92-A, Bronze Swing Check	Prevent Backflow Into City Water Lines
E	1	Fig. 106-A, Bronze Globe	Surge Tank Drain
F	1	Fig. 106-A, Bronze Globe	Surge Tank and Balance System Control
G	2	Fig. 47-U, Bronze Gate	Tube Side of Heat Exchanger Shutoff
H	2	Fig. 47-U, Bronze Gate	Automatic Valve Shutoff
J	1	Fig. 106-A, Bronze Globe	Manual Bypass Control
K	1	Fig. 47-U, Bronze Gate	Shutoff System From Steam Condensate
L	1	Fig. 92-A, Bronze Swing Check	Prevent Steam Condensate Backflow
M	1	Fig. 106-A, Bronze Globe	Trap Test Control
N	1	Fig. 47-U, Bronze Gate	Steam Trap Shutoff
P	1	Fig. 106-A, Bronze Globe	Free Blow and Drain Shell Side of Heat Exchanger Control
R	3	Fig. 743-G, Bronze Needle	Pressure Gage Control
S	1	Fig. 106-A, Bronze Globe	Tube Side of Heat Exchanger Drain
T	1	Fig. 106-A, Bronze Globe	Regulate Pump Discharge and Shutoff Pump
U	1	Fig. 92-A, Bronze Swing Check	Prevent Backflow Into Pump
V	1	Fig. 47-U, Bronze Gate	Pump Shutoff
W	1	Fig. 106-A, Bronze Globe	Pump Drain

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
JENKINS SINCE 1864
Jenkins Bros

Sold Through Leading Distributors Everywhere

EQUIPMENT DEVELOPMENTS

Information on capacities, dimensions, applications, and special features in each item is presented in accordance with material furnished by the manufacturers, who may be contacted directly for more details. For reviews of Recent Trade Literature see page 348



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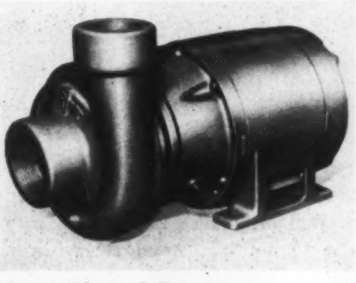
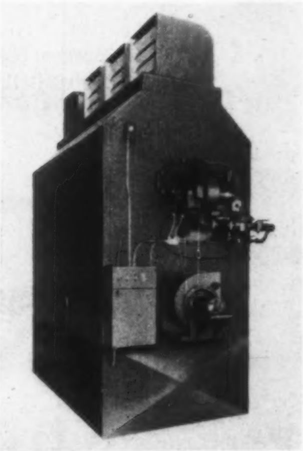


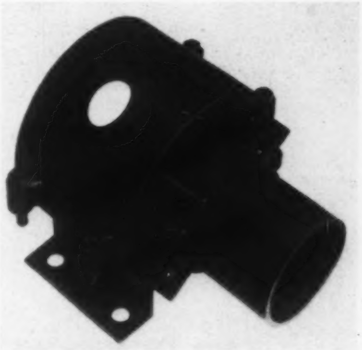
Centrifugal Pumps . . .

. . . designed for quiet operation in air conditioning, heating, and other applications. Operating speed 1750 rpm. Pumping rates range from 15 to 500 gpm with heads to 110 ft. Ball bearing motors from $\frac{3}{4}$ to $7\frac{1}{2}$ hp, drip-proof or totally-enclosed construction. Can be mounted horizontally, vertically, or in any position as long as motor is kept higher than pump. Form 70287 sent on request — *Ingersoll-Rand Co.,* 11 *Broadway, New York* 4.



Direct-Fired Heaters . . .

. . . for heating large open areas such as warehouses and factories or adaptable to duct systems for schools, churches, and public buildings. Sizes from 2,000,000 to 4,000,000 Btu per hr for firing with light or heavy oil, gas, or gas-oil. — *Jackson & Church Div., York-Shipley, Inc., P.O. Box* 349, *York, Pa.*

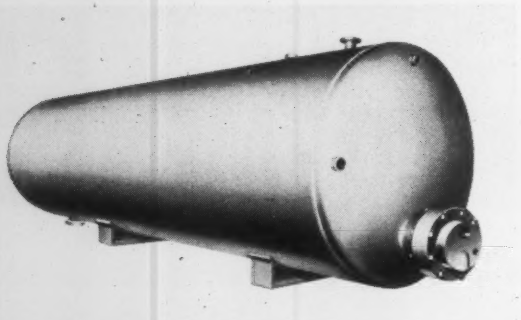


Pipe Guides . . .

. . . controls amount of lateral offset and angular rotation to which expansion joints are subjected by change in pressure and pipe movement; at intermediate locations, restricts bowing of line resulting from end load. Also functions as a pipe support. Consists of carbon steel guide spider and casing for $\frac{3}{4}$ to 30 in. diameter pipe sizes with up to 2 in. of insulation. — *Tube Turns Div., Chemetron Corp.,* 224 *E. Broadway, Louisville* 1, *Ky.*

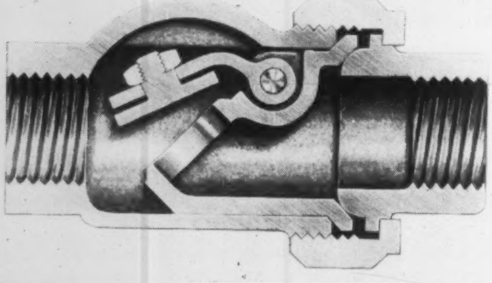
Pump Seals . . .

. . . with static sealing effected by flexible bellows and packing ring. Sealing is between stationary seal face and the rotating seal face. Lapping makes it possible to maintain rubbing surfaces in a highly polished condition. — *U.S. Seal Mfg. Corp.,* 60 *Lispenard St., New York* 13.



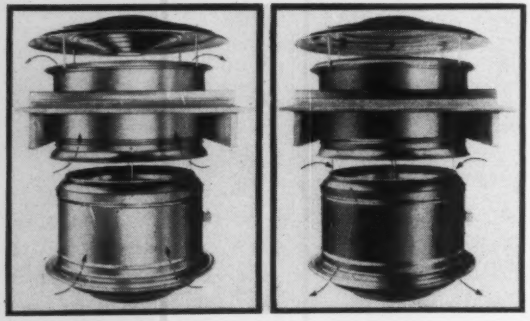
Storage Water Heaters . . .

. . . in both horizontal and vertical models, 55 sizes, and a choice of 114 heating elements, all conforming to ASME specifications. Tanks are of welded, flange steel construction. Removable U-tube heating elements constructed of seamless drawn Admiralty or copper tubing. Bulletin 61 sent on request. — *Niagara Weldments Inc., 55 Portage Rd., Niagara Falls, N.Y.*



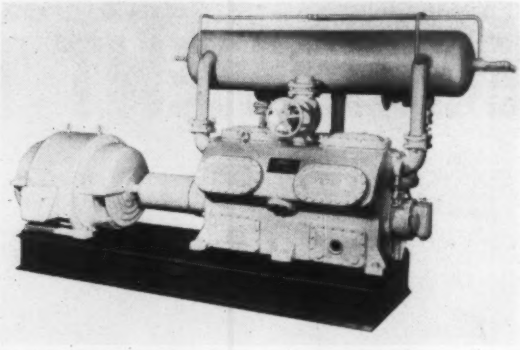
Check Valves . . .

. . . with swing disc available with union or threaded flange connections for working pressures to 250 psi. Units feature renewable "disc unit insert," for either horizontal or vertical installations for pipe sizes from 1/4 to 2 in. diameter. — *Flomatic Corp., Hoosick Falls, N.Y.*



Roof Ventilator . . .

. . . dual purpose unit recovers heat trapped under the roof line and returns it to floor level during winter. In summer, acts as an exhaust. Size range from 3000 to 23,000 cfm. — *Genie-Air Products, Div. of N. T. W. Corp., 3001 E. 11th St., Los Angeles 23.*

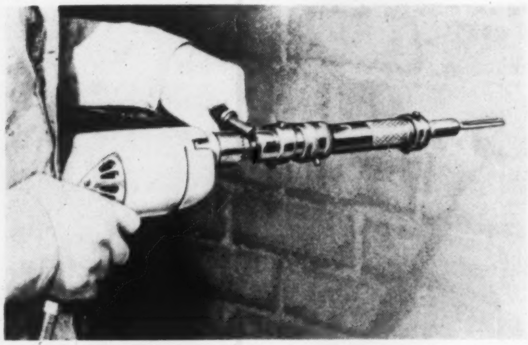


Two-Stage Compressors . . .

. . . with a range of from six to 40 tons capacity. Model with 12 cylinders for operation with ammonia, Refrigerants 12 and 22. Features removable cast alloy iron cylinder liners and spring-loaded safety heads. — *The Vilter Mfg. Co., 2148 S. First St., Milwaukee 7.*

Packaged Air Heater . . .

. . . direct fired unit for heating process air. Features high combustion efficiency and absence of impurities. Safety features include air purge, flame failure safeguards, and continuous pilot with electric spark ignition. No flame flashback possible, even with high hydrogen fuel. Available in sizes from 100,000 to 10,000,000 Btu per hr output. — *Black, Sivalls & Bryson, Inc., 7500 E. Twelfth St., Kansas City 26.*



Power Hammer Converter . . .

. . . for converting rotary drills to power hammers and percussion drilling. Will drill holes in hard masonry when attached to a 1/4 in. high-speed rotary drill. Adjustable for light, medium, or heavy blows. Automatic clutch engages only when drill point touches masonry. Unit weighs 2 3/4 lb. — *The Rawlplug Co., Inc., 248 Petersville Rd., New Rochelle, N.Y.*

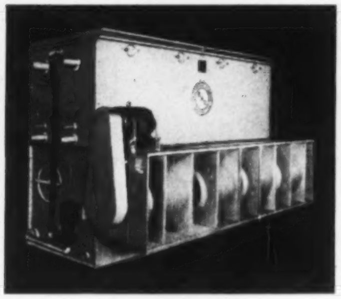
BALTIMORE AIRCOIL COMPANY, INC.

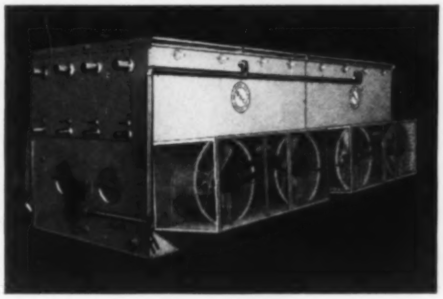
P.O. Box 7322, Baltimore 27, Maryland

EVAPORATIVE CONDENSERS — COOLING TOWERS

B.A.C. EVAPORATIVE CONDENSERS—10 to 700 Tons (Larger sizes on special order)

for Refrigerants 12, 22, and Ammonia


Blow-Through
Centrifugal Fans
Maximum Accessibility


Blow-Through
Tubeaxial Fans
For Horsepower Saving

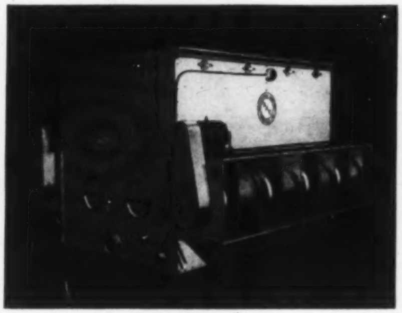
Draw-Through
Centrifugal Fans
Minimum Floor Space

One of the most complete lines of Evaporative Condensers offered. From 3 different models, you can select the unit that exactly suits your installation requirements. Baltimore Aircoil has specialized in the manufacture of Evaporative Condensers for over 20 years and is a recognized leader in this field.

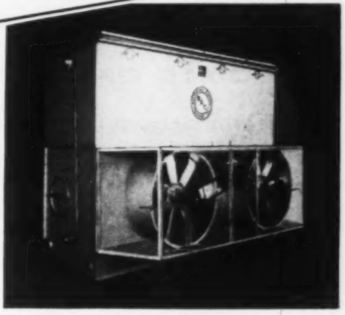
Booth 39
ASHRAE SHOW, CHICAGO
February 13-16

B.A.C. COOLING TOWERS—10 to 800 Tons

for Air Conditioning, Refrigeration, and Industrial Uses

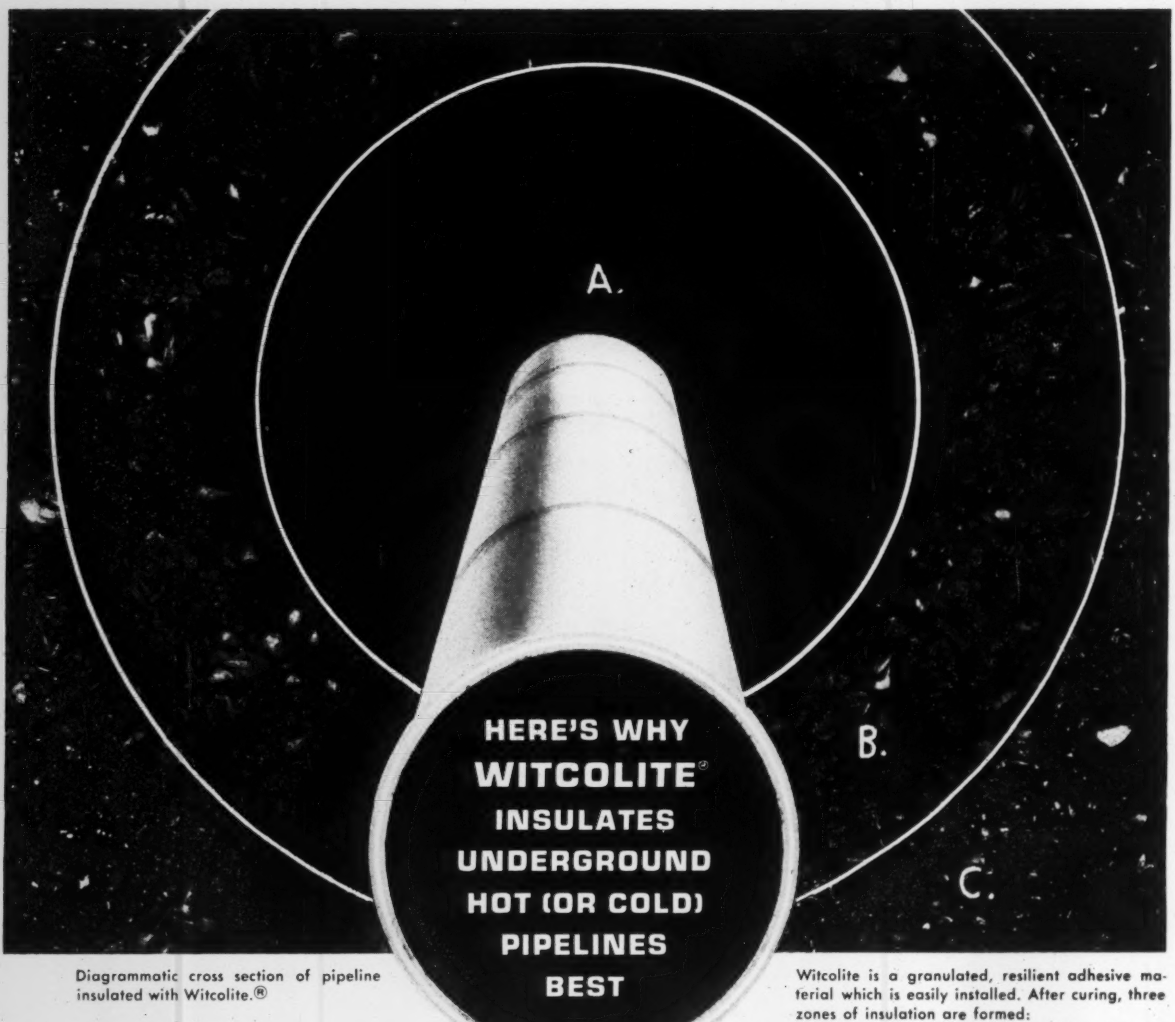

Blow-Through
Centrifugal Fans
Quiet Operating

Draw-Through
Centrifugal Fans
Ideal for Indoors


Blow-Through
Tubeaxial Fans
For Outdoor Use

All B.A.C. Cooling Towers as well as Evaporative Condensers are factory assembled from mass-produced interchangeable parts. Die-made panels and jig assembly assure perfect matching of the sections.

Both Towers and Condensers are constructed entirely of hot-dip galvanized steel and further protected from corrosion by B.A.C.'s Zinc-Chromatized Aluminum Finish. With their fireproof materials, quiet operation, and small overall size, these units are ideal for today's modern buildings.



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Diagrammatic cross section of pipeline insulated with Witcolite.®

Witcolite is a granulated, resilient adhesive material which is easily installed. After curing, three zones of insulation are formed:
A) cured zone—insulating and anticorrosive area locked around pipe. **B) sintered zone**—air-pocketed insulating area...moisture barrier. **C) granular zone**—loose particles providing maximum thermal insulation.

WITCOLITE OFFERS ALL THESE ADVANTAGES

3 LABORATORY-CONTROLLED GRADES of granulated particle size assure perfect high thermal insulation of underground hot pipes...even with pipes alternately conveying hot and cold liquids. **HIGH THERMAL INSULATION** is the result of Witcolite's three zone protection. The product resists physical breakdown and adheres resiliently to pipes as they expand and contract with temperature changes. **HIGH CORROSION RESISTANCE** protects pipes permanently against acids and alkalis found underground. Witcolite is also effective against electrolytic processes. **HIGH WATER RESISTANCE,** results from the surface tension differential between water and Witcolite. No wetting of the underlying surface occurs. **LOWEST COST** of any quality material on an installed basis is an extra plus with Witcolite. *For further information or technical literature on Witcolite, simply write or call the nearest Witco office listed below for your local representative's address.*

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PIONEER PRODUCTS DIVISION
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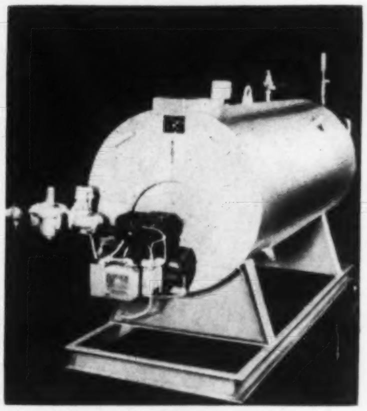
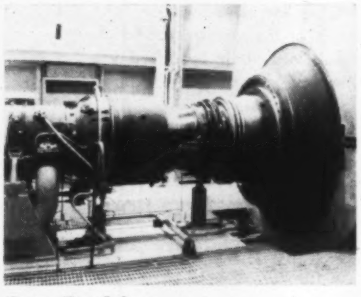


Hot Water Boiler . . .

. . . packaged unit fired by oil, gas, or oil-gas. Includes a forced draft burner and controls mounted and wired, and a water mixing valve. Seven sizes available to handle a peak recovery rate of from 550 to 2100 gph. Maximum height of units is 58 in. — *Atlantic Steel Boiler Co., 22nd & Washington St., Philadelphia 46.*

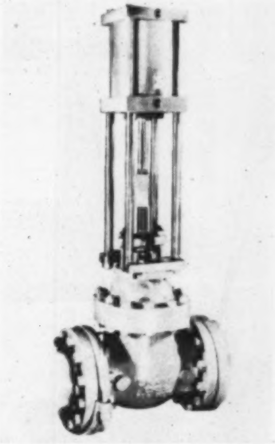
Valve Repair Kit . . .

. . . for repairing castings, valves, pumps, and similar applications. Kit consists of "Devcon F" and hardening agent, in tubes, and a mixing paddle. The two are mixed in equal amounts making a mixture which contains approximately 80 percent aluminum and 20 percent epoxy resins and modifiers. Adheres to steel, iron, aluminum, bronze, glass, and other surfaces. — *Devcon Corp., Danvers, Mass.*



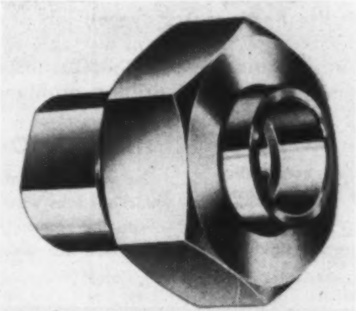
Gas Turbine . . .

. . . incorporating a Pratt & Whitney aircraft jet engine modified to burn gas or other conventional fuels. Unit rated at 10,500 hp provides high thrust which is converted to rotative power by a heavy duty free turbine. Smaller units being developed for driving pumps, compressors. Bulletin No. 95B gives engineering data and performance characteristics. — *The Cooper-Bessemer Corp., Mount Vernon, O.*



Cylinder Operator . . .

. . . adaptable to outside screw and yoke, iron body wedge, or double disc gate valves, and to pulp stock valves. Available for field installation or as a component of firm's valves. — *Crane Co., 155 N. Wacker Dr., Chicago 6.*



Union Fitting . . .

. . . for tube and pipe from 1/8 to 1 in. OD on applications with temperatures ranging from −450 to 1500 F and pressures up to 16,000 psig. Bulletin 804 sent on request. — *Aeroquip Corp., Marman Div., 11214 Exposition Blvd., Los Angeles 64.*

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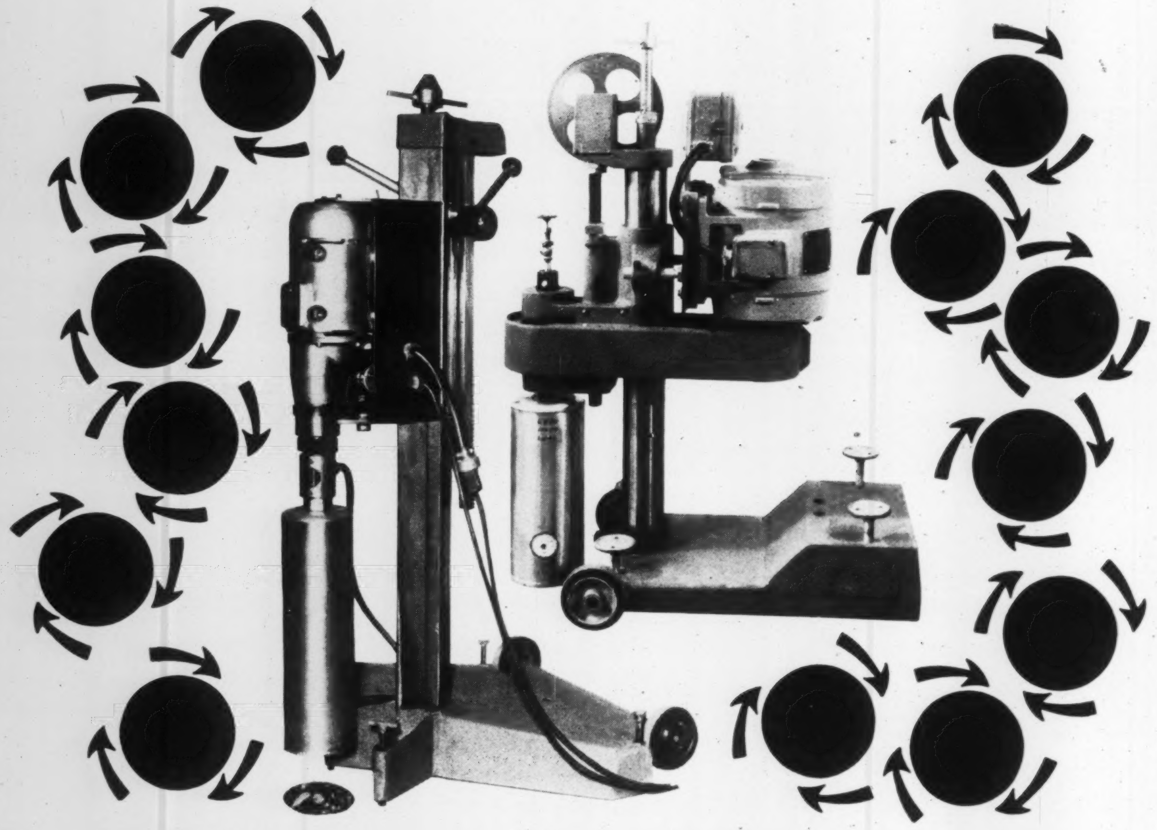

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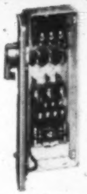
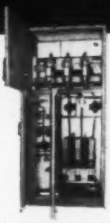
SOLENOID STARTER
Made in 9 sizes with ratings to 450 hp, 220 v; 900 hp, 440-550 v.
Bulletin 709



COMBINATION STARTER
Has manual disconnect switch. Ratings to 100 hp, 220 v; 200 hp, 440-550 v.
Bulletin 712

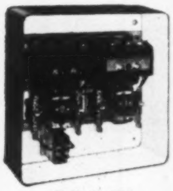
MANUAL STARTER
Rugged snap action switch assures long life. Ratings to 7½ hp, 600 v.
Bulletin 609

SMALL MOTOR STARTING SWITCH
With dependable overload breaker. Rated 1 hp.
Bulletin 600



HIGH VOLTAGE STARTER
Has rugged air break contactor. Ratings to 1500 hp, 2300 v; 2500 hp, 4600 v.
Bulletin 1159

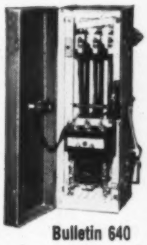
REDUCED VOLTAGE STARTERS



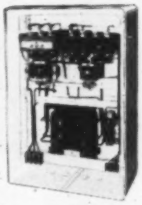
Bulletin 736

◀ **PART WINDING STARTER**
For induction motors with separate parallel stator windings. Ratings to 600 hp, 220 v; 1200 hp, 440-550 v.

MANUAL RESISTANCE STARTER ▶
Graphite disc resistors provide velvet smooth acceleration. Ratings to 200 hp, 220-440-550 v.



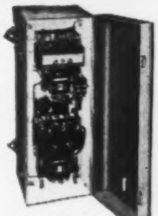
Bulletin 640



Bulletin 746

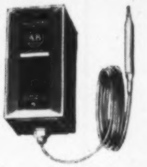
AUTOMATIC RESISTANCE STARTER ▶
Graphite disc resistors automatically inserted during starting for velvet smooth acceleration. Ratings to 200 hp, 220-440-550 v.

◀ **AUTOMATIC AUTOTRANSFORMER STARTER**
Limits current inrush during starting of squirrel cage motors. Rated to 300 hp, 220 v; 600 hp, 440-550 v.



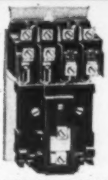
Bulletin 740

CONTROL ACCESSORIES



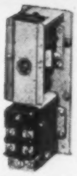
TEMPERATURE CONTROLS
Precision snap action switch prevents contact chatter. Rugged, compact unit. Operating ranges — 150°F to 490°F.
Bulletin 837

PRESSURE CONTROLS
Positive contact operation, unaffected by vibration or mounting angle. Operating ranges 30" vacuum (Hg) to 900 psi.
Bulletin 836



CONTROL RELAYS
New Type BR above has convertible contacts. Types B, general purpose; and BX, universal, relays available.
Bulletin 700

PUSH BUTTON STATIONS
Wrap-around cover cuts wiring time. Selector switch can be quickly converted for two- or three-way service.
Bulletin 800



TIMING RELAYS
Easily adjustable from 1/20 to 180 sec ± 10%. Can be changed in the field for ON-DELAY or OFF-DELAY operation.
Bulletin 849

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- Straight-through full flow
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- Self-grinding rotating disc

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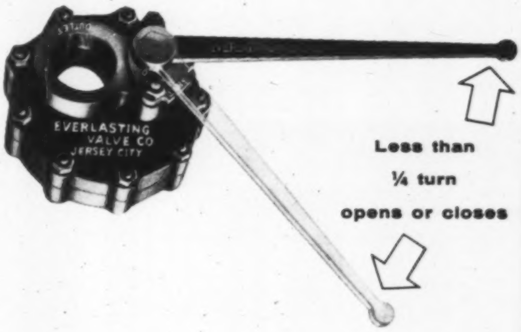
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Less than ¼ turn opens or closes

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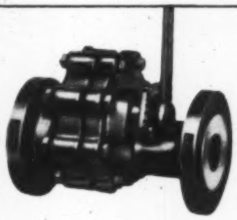
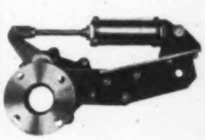
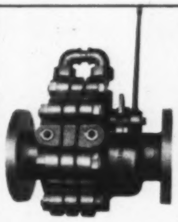
Quick acting, also handwheel operated "Y" and angle types. For pressures up to 600 psi.



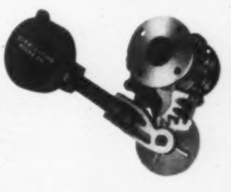
GENERAL SERVICE
Where drop-tight seal and full flow is essential.



CYLINDER OPERATED
Can be remotely controlled, electrically or manually.



STEAM JACKETED
Assures free flow of viscous materials.



WEIGHT-OPERATED
For automatic drains or emergency shut off.

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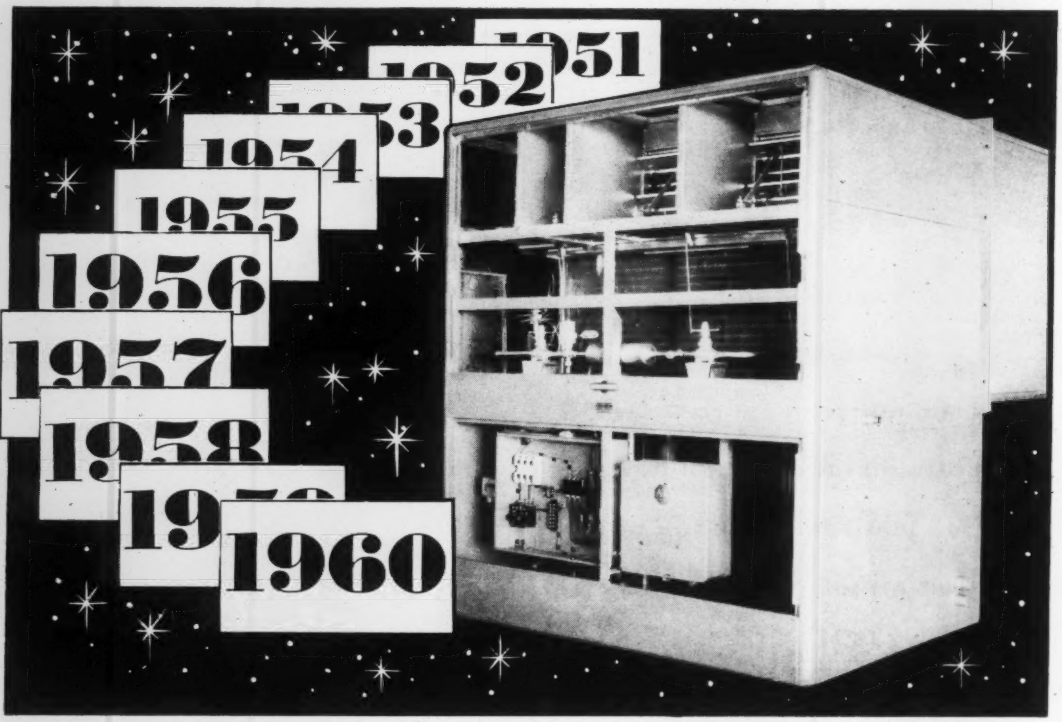
EV-407



a decade of proven performance in self-contained multi-zone units

Yes, for ten years, GOVERNAIR has led the way in the engineering and development of self-contained multi-zone air conditioning units.

Both the Evaporative Condenser Package (type SCMZ) and the Water Cooled Condenser Package (type STMZ) are far beyond the pioneering stage, and have been tested and proven in actual use throughout the world, under widely-varied conditions.

Available in 8 through 100 tons, every unit is "Satisfabricated" to fit individual job zone and capacity requirements . . . assembled from the finest materials and components, then thoroughly factory-tested before delivery. For complete information, please write . .

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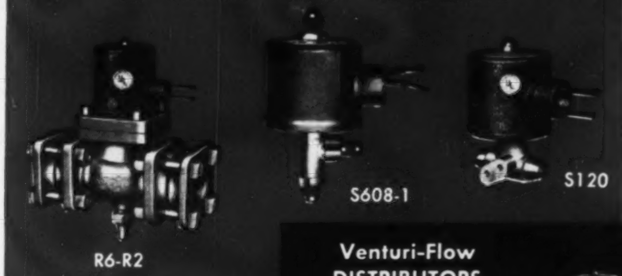

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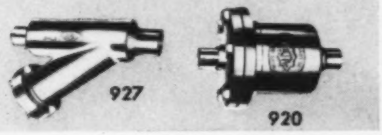
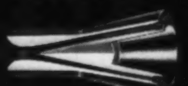
maximum Screen area—
Sizes & Type for every application



Venturi-Flow DISTRIBUTORS



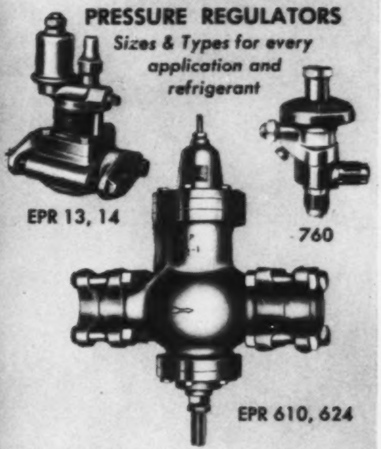
wide application . . . low pressure drop . . . any position . . . one-piece construction . . . no nozzles

Float SWITCHES

for trouble free liquid level control

EVAPORATOR PRESSURE REGULATORS

Sizes & Types for every application and refrigerant

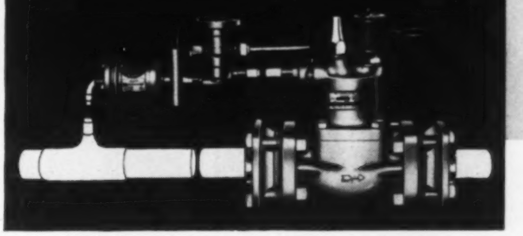


REFRIGERANT FILTER-DRIER

97% pure Dessicant
Block Form
Silica-Gel PA 400
and Molecular Sieve

P.O.S. PILOT OPERATED THERMO® VALVE

with integral solenoid stop . . . for larger installations



Use and Specify ALCO Controls the one complete line designed and engineered for efficient trouble free performance.

See your Alco Wholesaler—Write for Specification Details

ALCO

ALCO VALVE CO. 861 Kingsland Ave. • St. Louis 30, Mo.

BUY SECURITY • BUY QUALITY • BUY ALCO

The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors • Soleniod Valves
Refrigerant Filter-Driers • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves

8217-2

BRUTE STRENGTH
RUGGED CONSTRUCTION
SKILLED ENGINEERING

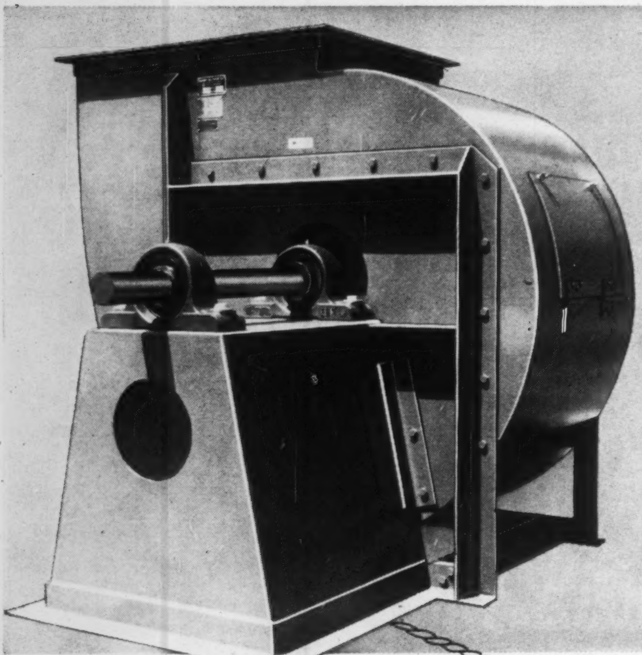
make

BARRY

Centrifugal Fans

SEE US IN BOOTH
720
15th INTERNAT'L HEATING &
AIR-CONDITIONING EXPOSITION
FEB 13-16
CHICAGO, ILLINOIS

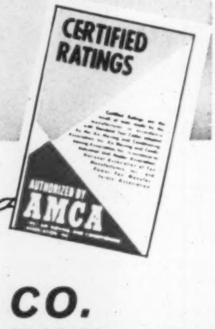
PERFORM WITH PERFECT SATISFACTION



Shown here is our No. 330 BBC SWSI arrangement 1 Fan, with ratings certified by AMCA . . . just one of a whole family of efficiently-engineered Barry fans, giving dependable daily performance all over America.

All Barry fans are ruggedly built to give long dependable service. Such things as extra heavy framing, oversized shafts, heavy duty bearings, welded housings, TG&P shafts, and dynamically balanced impellors, are taken for granted by users of Barry blowers, because they know such construction is typical of the entire Barry line.

The fan shown is handling air in the asphalt plant of a large midwestern city at high pressure and high temperature. Whatever YOUR blower problem may be, there's a Barry fan that can solve it. Tell us your problem—we'll come through with the correct solution, plus speedy delivery!

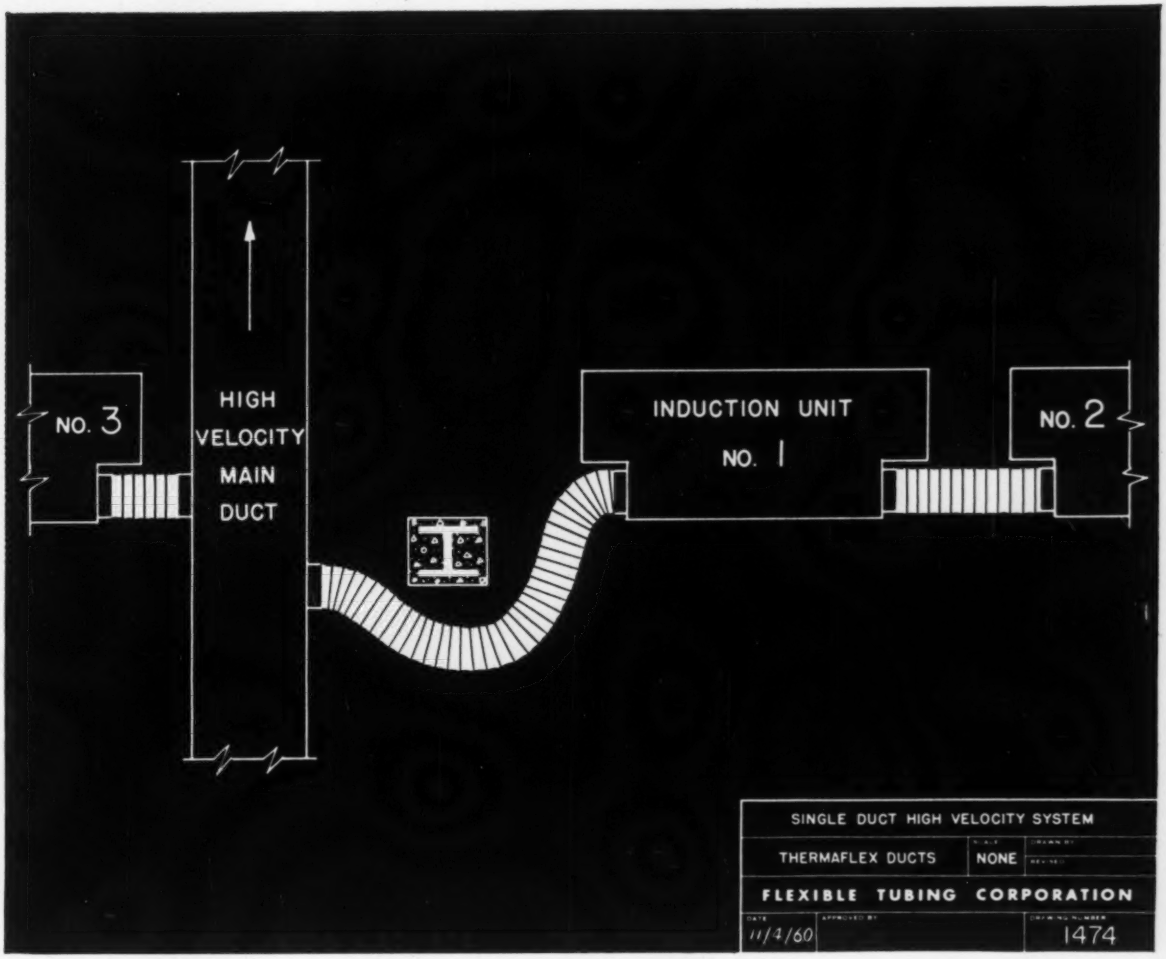


PERFORMANCE RATING
CERTIFIED BY AMCA

BARRY BLOWER CO.
3100 CALIFORNIA ST. N. E., MINNEAPOLIS 18, MINN.

member of air moving and conditioning association inc.

FC VENTILATING FANS • INDUCED DRAFT FANS • STEEL PLATE FANS • FAN WHEELS AND SCROLLS • BBC VENTILATION FANS • FORCED DRAFT FANS • FUME EXHAUST FANS • UTILITY EXHAUSTERS • BELTED VENTILATING SETS • MATERIAL HANDLING FANS • MEDIUM PRESSURE BLOWERS • SPECIAL APPLICATIONS


NO. 3
HIGH VELOCITY MAIN DUCT
INDUCTION UNIT NO. 1
NO. 2
SINGLE DUCT HIGH VELOCITY SYSTEM
THERMAFLEX DUCTS
NONE
FLEXIBLE TUBING CORPORATION
11/4/60
1474

In the single duct high-velocity system . . .

Flexible Tubing simplifies connections to diffusers...gives you greater design flexibility

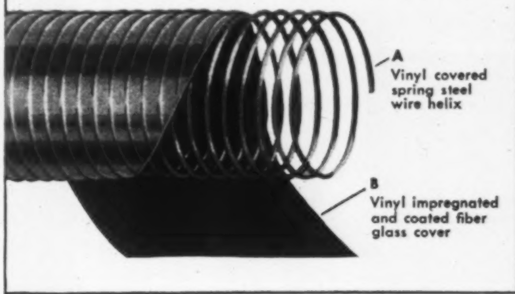
Flexible Tubing is the lightweight duct designed to help you in laying out both low-velocity and high-velocity systems.

Its extreme flexibility permits leading ducts around obstructions and through tight passages in gradual, gentle bends with minimum air flow loss. Even when sharp turns are necessary, duct cross-section is held constant by Flexible Tubing's strong supporting round wire helix — there are no flat bands to project into the air flow.

Flexible Tubing greatly reduces mechanical noises due to vibration . . . corrects for misalignment at points of take-off. It's flameproof, moisture-proof, easy to install.

Capitalize on the flexibility of this remarkable product in the next system you design. For complete information on Underwriters'-approved Thermaflex®, write to Flexible Tubing Corp., 510 New Whitfield Street, Guilford, Connecticut.

See why THERMAFLEX-ST is so flexible and rugged!


A
Vinyl covered spring steel wire helix
B
Vinyl impregnated and coated fiber glass cover

Flexible Tubing
CORPORATION
GUILFORD, CONNECTICUT
Anaheim (Los Angeles) • Hillside (Chicago)

FIRE TRAPPED

before it spreads...

WHY?

FIRE DAMPER RATING 1-1/2 HOURS · Imperial DAMPER CO. NEW YORK, N.Y.

FEATURES	U.L. 1½ HOUR TESTS*	U.L. FACTORY INSPECTIONS	APPROVAL BY BOARD OF STANDARDS & APPEALS, N.Y.C.
Competitor X	NO	NO	NO
Competitor Y	NO	NO	NO
Competitor Z	NO	NO	NO
IMPERIAL MODEL VWNYT-1	YES	YES	YES

MODEL VWNYT-1

A Multi-Blade Fire Damper now produced under the factory inspection and label service of the Underwriters Laboratories Incorporated. ***SPECIFY* IMPERIAL #VWNYT-1 FIRE DAMPERS.**

OTHER IMPERIAL PRODUCTS INCLUDE...

AUTOMATIC & VOLUME DAMPERS

N.B.F.U. SERIES #90-A HORIZONTAL, VERTICAL OR ROUND DUCT

EXTRUDED ALUMINUM, STATIONARY & ADJUSTABLE LOUVERS

Manufacturers of Mixing Dampers, Back Draft Dampers, Shutters, Stationary and Adjustable Formed and Extruded Louvers. Send for our informative brochure. Representatives in principal cities.

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664 EDGECOMBE AVENUE
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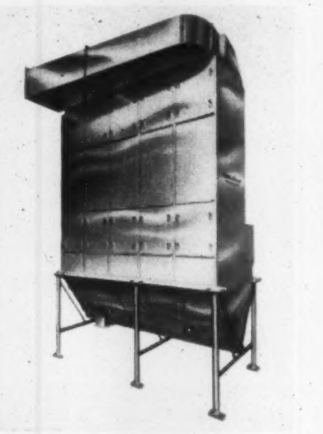
LOrraine 8-9100

EQUIPMENT DEVELOPMENTS

Continued

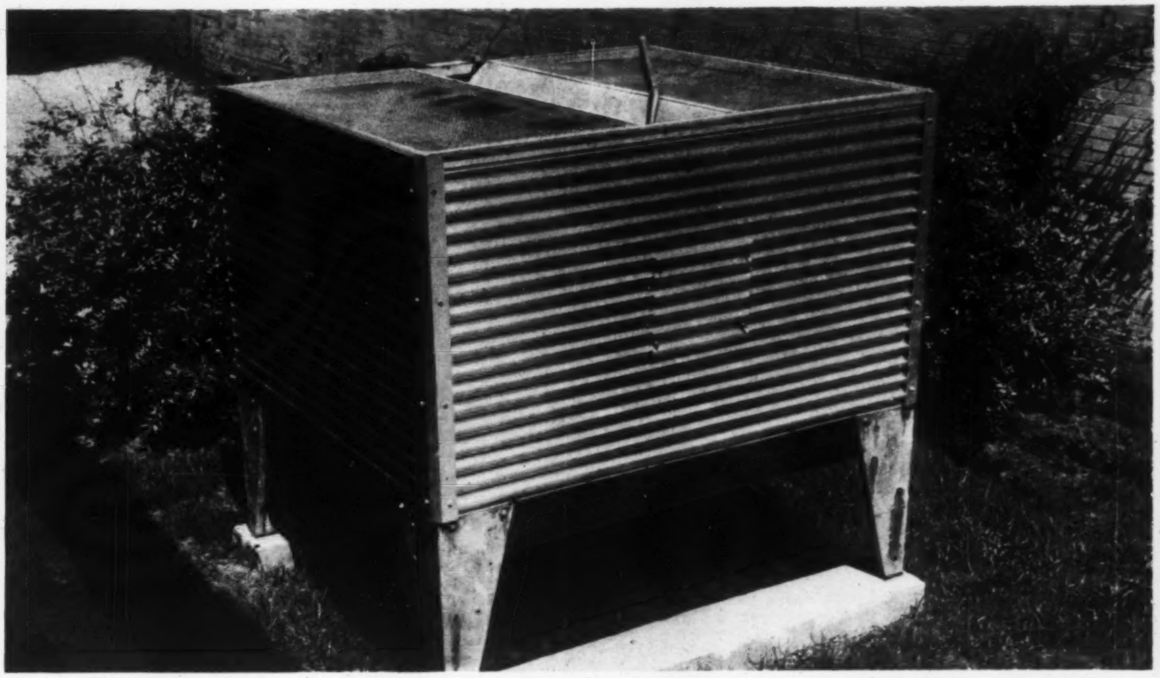


Dust Collectors . . .

. . . automatic units of modular design and self-cleaning action. Sized by number of sections they incorporate, which is from two to 12. Up to 58,000 cfm of air can be handled through a 12-section model. Power supplied by ¾ hp motor. Cotton sateen cloth standard for filters; other materials available. —*Automatic Collector Div., Torit Mfg. Co., 1131 Rankin St., St. Paul 16, Minn.*

Pipe Fittings . . .

. . . forged steel screw and socket welding fittings to meet 2000, 3000, 4000, and 6000 psi pressure specifications. Included are 45 and 90 deg elbows, tees, cross and lateral fittings, couplings, reducers, and caps for pipe sizes from ⅛ to 4 in. diameter. Units feature a phosphate coating on steel for rust protection. — *Clayton Mark & Co., 1900 Dempster St., Evanston, Ill.*

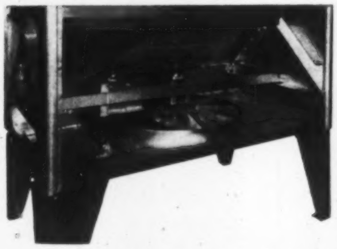


compatibility

stands out in

Marley Series B DriCooler®

AIR COOLED CONDENSERS



Ask the Marley Man (or write) for Bulletin DC-60 that explains why DriCoolers also have outstanding . . .

capability
durability
adaptability
controlability

The ability to fit inconspicuously into the planning of new structures or into the surroundings of established buildings is an important characteristic of Series B DriCoolers. In designing these new, high-efficiency condensers, Marley engineers gave architectural compatibility equal precedence with durability and performance capability.

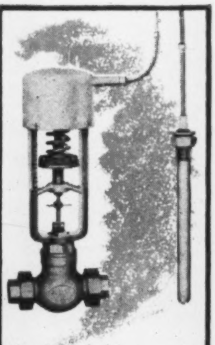
The trim, corrugated aluminum casing conceals fan, motor and coils—completely. The rigid, truss-type structural frame of these low height units is out of view. Diagonally mounted coils minimize over-all dimensions. Inconspicuous, unobtrusive, quiet —these attributes are characteristic of all Series B DriCoolers.

Series B DriCoolers are of vertical, blow-through design that is most adaptable to any desired location. Performance is never affected by wind direction or velocity, and recirculation of heated air is precluded by the air intake and discharge being at different and well-separated elevations.

U. S. and Foreign Patents Pending

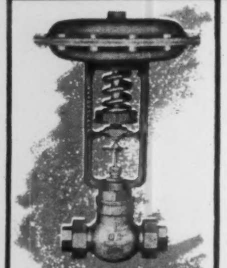
THE MARLEY COMPANY MARLEY KANSAS CITY 14, MISSOURI

Robertshaw
"WORK HORSE"
PRODUCTS
Designed to keep your
"Controls Complex" Simple



No. 1003 Series
Simple, rugged, self-powered regulator for heating or cooling applications. Valve sizes ¼" through 4"; temperature ranges from −25°F to +455° F.

Packless Expansion Joints in a complete range of styles for risers or horizontal runs. Leak-proof for life of building.

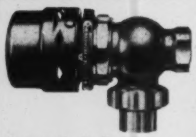


No. 1066 Series
Diaphragm-type pressure regulator for steam, gas, air or water. Wide choice of ranges. Also available with bellows actuator.

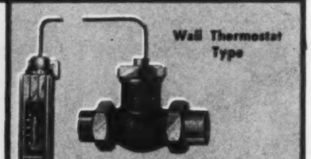
The controls complex in any major building can easily get out of hand . . . as individual units tend to become more and more complicated. Robertshaw takes the other road . . . gives you a broad line of selp-op, pneumatic and electric controls that combine efficiency, ruggedness and simplicity to charm the maintenance man . . . who becomes almost a "man of leisure" when Robertshaw's installed!

New catalog describes Robertshaw's multiple products for the building field . . . especially for architects, contractors, engineers. Ask for Catalog AH-1700.

Robertshaw Acragage
A broad line of pressure, vacuum, compound and test gages. Solid-front safety and rear blow-out disc at no extra cost.

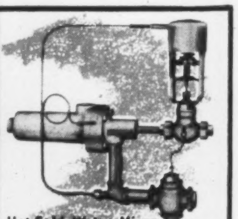


Automatic Radiator Valves . . . Lowest cost individualized control . . . for one office or a 400-room hotel.



Wall Thermostat Type

Self-powered regulators for controlling steam supply to unit heaters, radiators, duct heater coils, etc.

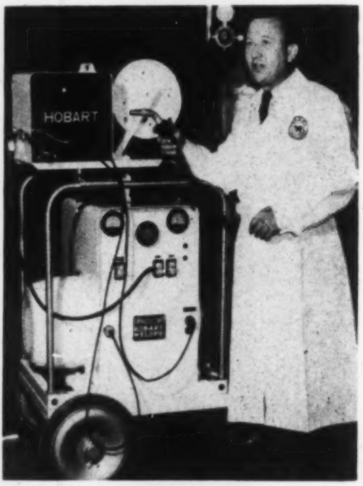


Hot-Cold Water Mixer
Provides controlled source of water at desired temperatures for wash basins, showers; or for process water in industry, etc.

Robertshaw
MR. CONTROLS
Robertshaw-Fulton Controls Company
FULTON SYLPHON DIVISION, KNOXVILLE 1, TENNESSEE

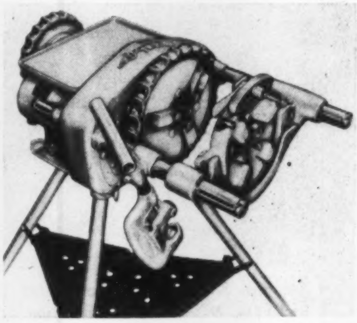
EQUIPMENT DEVELOPMENTS

Continued



Packaged Welder . . .

. . . constant voltage motor generator unit, rated 200 amp at 25 v. Semi or fully automatic electric arc process continuously feeds a small diameter bare wire electrode into a welding zone. Package includes: the welder, ammeter, voltmeter, wire feed unit, "Micro" gun cable assembly, gas regulator, and flow meter with hose and argon adapter fittings. — *Hobart Bros. Co., Troy, O.*



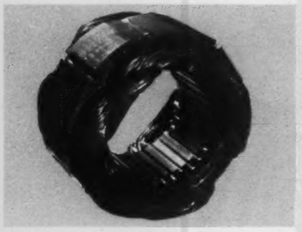
Pipe Threader . . .

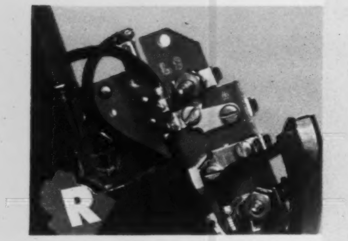
. . . with balanced yoke and gear drive which provides direct connection between twister and threader. Yoke handles firm's "No. 2" geared stock for threading pipe and conduit 2½ through 4 in. diameter. — *Nye Tool Co.,* 4120 *Fullerton Ave., Chicago* 39.

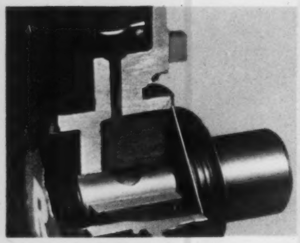
A NEW Duty Master FHP.
for heavy-duty industrial use

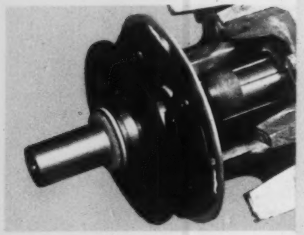
RELIANCE : MASTER
ELECTRIC AND ENGINEERING COMPANY : ELECTRIC COMPANY DIVISION

A NEW
Duty Master FHP.


PROTECTED STATOR


TERMINAL BOARD


SLEEVE BEARING


CENTRIFUGAL CUT-OUT

TOUGH ... COMPACT ... COOL!

A motor that combines new, most-wanted features at no extra cost

Duty Master:

This motor is tough all over . . . deliberately designed for heavy industrial duty. Frame is rolled from steel—end shields cast from an aluminum alloy specifically selected for strength. Ball bearings are double-shielded, with lubricant packed into the bearing for life. Sleeve bearings are steel-backed and babbitt-lined for low friction and long wear. "Permawick" oil retaining material provides maximum lubrication to these bearings. Rotor is pressure-cast from high purity, low-resistance aluminum. Varnish impregnated stator resists moisture . . . and adds strength to windings.

Duty Master:

More power per pound . . . simple installation, 33% lighter than other preceding motor designs. Good design and materials make the difference. Makers of motor-driven products save on shipping and handling costs. Duty Master's light weight and small size make possible lighter, less complex mounting on equipment. Terminal board provides easy power connection in the front end shield. Cover plate quickly removable. Motor rotation easily reversed by interchanging slip-on connections.

Duty Master:

Up to 10% cooler than other comparably rated motors . . . yet gives you maximum protection. High load capacity results from new, effective ventilation of critical heat sources. Laminations, coils and rotor are literally rinsed with cooling air through new end shield design. In totally-enclosed, non-ventilated motors, the fan, cast integrally with rotor, circulates the air within the motor at a rate appropriate to efficient transfer of heat to motor frame and end shield. And load carrying capacity of the totally-enclosed fan-cooled motor is increased by a fan and shroud directing air over the frame and end shield.

Duty Master:

Quiet . . . Smooth . . . Positive. Resilient mounting composed of metal-rimmed, rubber-cushioning rings that encircle the bearing hubs on each end and support the motor. Motor can be mounted in any position. Single phase starter winding circuit automatically opens at 80% of full load speed. Action is quiet and positive.

Available now in 48 and 56 frame sizes, from conveniently located stocks. Duty Master FHP. is made in ⅛, ⅙, ¼, ⅓, ½ and ¾ hp. capacitor-start, split-phase and polyphase for 48 and 56 frames; repulsion-start induction-run in 56 frame. Your Reliance Sales Engineer or Distributor has all the facts at his finger tips. Call him or write for Bulletin B-2514. It will be sent to you promptly. B-1675

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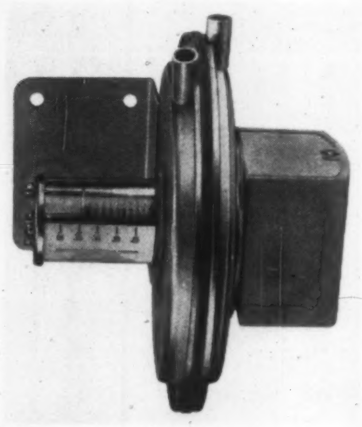
RELIANCE ELECTRIC AND ENGINEERING CO.

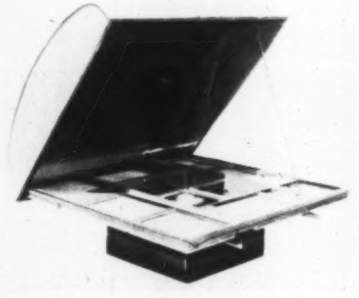
CLEVELAND 17, OHIO
Canadian Division: Toronto, Ontario
Sales Offices and Distributors in principal cities

Duty Master A-c. Motors, Master Gearmotors, Reeves Drives, V★S Drives, Super 'T' D-c. Motors, Generators, Controls and Engineered Drive Systems.



Pressure Switch . . .

. . . differential unit for such applications as liquid level controls, induced draft interlocks, exhaust hoods, dust collection systems, and air filters. One unit in No. "1630" Series may be set to open a circuit on a pressure differential increase of 0.05 in. of water and to close on a decrease of 0.03 in. WG. Bulletin E-30 sent on request. — *F. W. Dwyer Mfg. Co., Dept. HA-8, P.O. Box 373, Michigan City, Ind.*



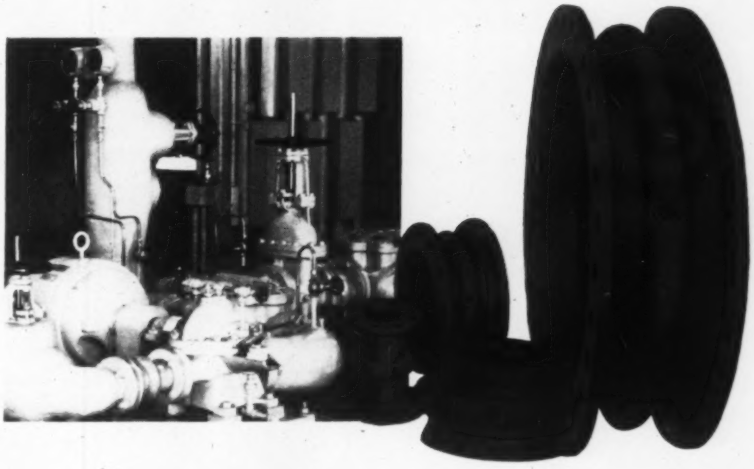
Roof Ventilator . . .

. . . delivers approximately 6000 cfm of air at 0 SP with standard ¾ hp motor at 860 rpm. Filter velocity is 300 fpm with filtration efficiency approaching 100 percent on all particles in the 10 to 20 micron range. — *Western Engineering & Mfg. Co., P.O. Box 66455, Los Angeles 66.*

Save . . . ON INSTALLATION AND REPLACEMENT COSTS

With

GOODALL *Rubber* EXPANSION JOINTS



Goodall Rubber Expansion Joints are flexible, durable connections for pipe lines and other equipment handling virtually all fluids and gases under pressure and vacuum, to prevent excess stresses due to expansion and contraction; to counteract vibration; and to insulate against undesirable sound. They can also be designed to overcome misalignment.

EASIER TO INSTALL—on new equipment or as replacements. Light in weight, with short face-to-face dimensions. Metal retaining rings quickly aligned and bolted. No gaskets required.

LONGER SERVICE LIFE—no embrittlement or corrosion. High resistance to abrasive wear.

STYLES, SIZES AND PRESSURES TO MEET ALL REQUIREMENTS

Contact Our Nearest Branch, or Write for Catalog

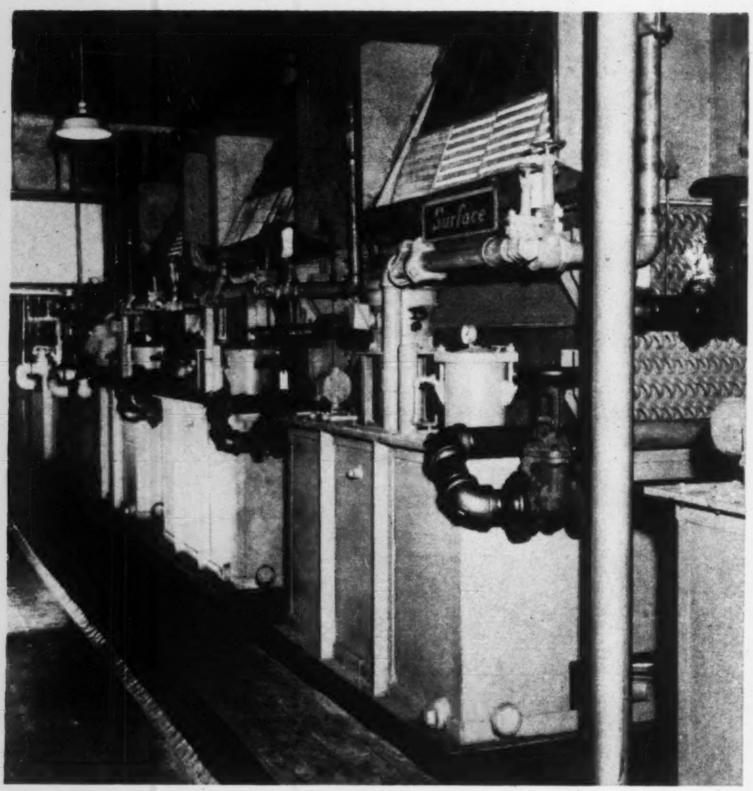
"If it's GOODALL, it MUST be Good!"

Standard of Quality—Since 1870

HOSE · BELTING · FOOTWEAR · CLOTHING
AND OTHER INDUSTRIAL RUBBER PRODUCTS

GOODALL *Rubber Company*

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
BRANCHES AND DISTRIBUTORS THROUGHOUT THE UNITED STATES.
IN CANADA: GOODALL RUBBER CO. OF CANADA LTD., TORONTO.



120 GRAINS CUT TO 45

IN 200,000 cfm OF AIR

WITH 85° TOWER WATER

Without Kathabar, this job would have taken 1800 tons of refrigeration, at about 35F and reheating air from about 45F to 98F! With Kathabar the job took 63 hp instead of 2000. Ask the men who have seen Kathabar Type C units serve for years with practically no maintenance. Write for specific information.

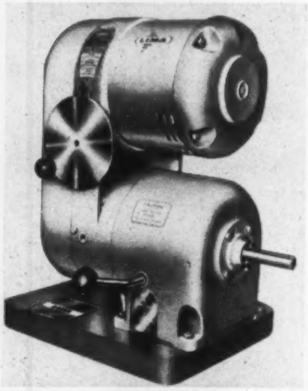
Surface

SURFACE COMBUSTION
Division of Midland-Ross Corporation MR
2384 Dorr St., Toledo 1, Ohio
Send facts on Kathabar systems for the following application:

name and title..
company..
street..
city..*zone*.......*state*..........................

EQUIPMENT DEVELOPMENTS

Continued

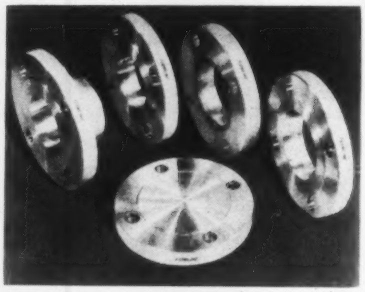


Variable Speed Drive . . .

. . . provides infinitely variable output speeds in each of four different transmission ratios. Every rpm between 180 and 1800 is obtainable from unit when 1800 rpm motor is incorporated. Either dripproof or totally enclosed fan-cooled units can be furnished in ½, ¾, or 1 hp. — *The Lima Electric Motor Co., Inc., Lima, O.*

Solder Paste . . .

. . . for copper tubing. A combination of 50/50 solder alloy and active flux. No cleaning of metal surface necessary; fluxing agents float away impurities. — *Force Chemical Div., American Solder & Flux Co.,* 19th *& Willard Sts., Philadelphia* 40.



Pipe Flanges . . .

. . . forged aluminum units made in ½ through 24 in. diameter pipe sizes. Flanges conform to A.S.A. B16.5 150 and 300 lb steel flange standards. Available in welding neck, slip-on, lap-joint, threaded, and blind. Bulletin 417 sent on request. — *Flowline Corp., New Castle, Pa.*

The Complete Line of Packaged

COOLING TOWERS . . .

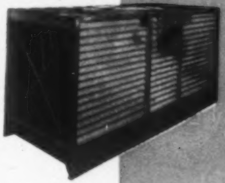
Havens

COOLING TOWERS

V. M. SERIES

80 thru 150 tons

Havens VM Series packaged cooling towers are shipped pre-assembled, incorporate internal piping, and are all steel constructed with California Redwood fill. The largest tonnage installation can easily be accomplished at lower cost by adding additional packaged towers.



"V" SERIES

80 thru 200 tons

The Packaged Cooling Tower that gives you flexibility on all types and sizes of installations. The Multi-Cell units can be easily added together for top capacity. The "V" Series features side panels for corrugated cement asbestos.

HAVEN "33-SERIES"

5 thru 75 tons

The "33-series" is recommended for residential and small commercial installations. The units are shipped assembled, ready for installation.

"C-B-C" SERIES

10 thru 150 tons

These rugged towers, feature access panels for quick and easy inspection. Designed for Indoor or Outdoor use.

Havens COOLING TOWERS

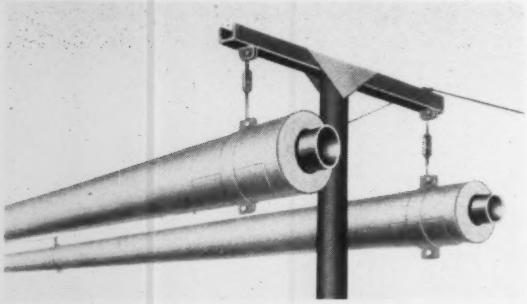
Division of

Havens Structural Steel Company

1713 Crystal Kansas City 26, Missouri

EQUIPMENT DEVELOPMENTS

Continued

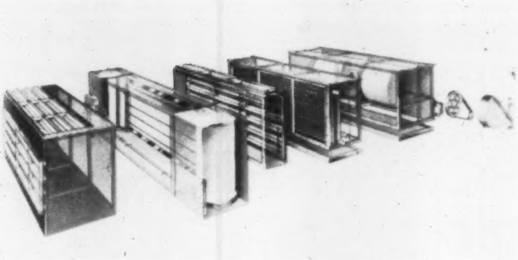


Prefabricated Overhead Pipe . . .

. . . for distribution of steam, hot water, and process liquids. Consists of pipe and insulation covered with aluminum foil, over which are two wrappings of fiber glass cloth integrated within "Plasti-clad" material. Complete with expansion loops, anchor units, elbows, and other accessories. — *Ric-wiL, Inc., Barberton, O.*

Core Drill Bits . . .

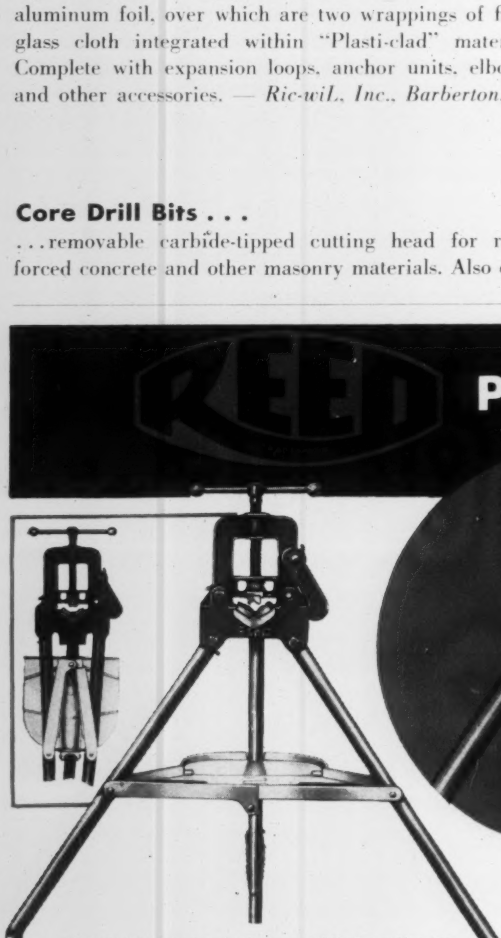
. . . removable carbide-tipped cutting head for reinforced concrete and other masonry materials. Also cuts wood, pitch, tar, and asphalt, etc., materials often encountered in masonry coring jobs. Available in sizes starting at 2 in. diameter with barrel adapters in various lengths. — *New England Carbide Tool Co., Inc., Medford, Mass.*



Packaged Air Conditioners . . .

. . . with all components designed, fabricated, and tested by one manufacturer. Unit and automatic air filters available as matched components. Both horizontal and vertical models in 14 basic sizes, with 24 different arrangements per size, 500 to 36,000 cfm. Bulletin No. AC-100 sent on request. — *American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.*

REED PORTABLE *Folding Tray* TRIPOD VISES



Patented folding tray locks legs solidly to end spring and recoil. Tripod folds compactly for convenient, one-hand carrying. Sets up or takes down easily.

Improved Chain Vise features a convenient side handle which ends fumbling or skinned knuckles. Capacity from 1/8" to 4" makes it ideal for construction or maintenance work.

Now available with a new and better Chain Vise or the long-jaw Yoke Vise

Reed Folding Tray Tripods are well known for their work-saving solidity and the ease with which they can be carried, set up or taken down.

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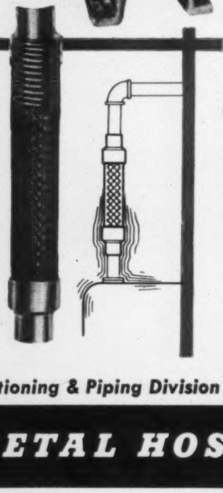

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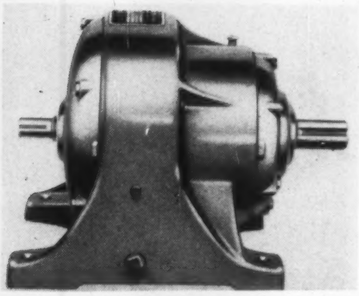

Speed Reducers . . .

. . . double reduction units in two types: "GDO" has normal double reduction gear; "GLO," also double reduction, but with duplex gear arrangement. Units have solid cast iron, one piece housings, and are driven by a separate direct-connected motor. Capacities range from 1/3 to 75 hp with ratios from 5.00 to 47.4 — *U.S. Electrical Motors Inc., P.O. Box 2058 Terminal Annex, Los Angeles 54.*

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. . . for clean, tight, permanent pipe couplings in metal, plastic, ceramic, rubber, and other pipe materials. Recommended for service from −300 to 500 F, "Pipe-Pac" prevents joint freezing, allowing disassembly if needed. — *Johns-Manville, 22 E. 40th St., New York 16.*

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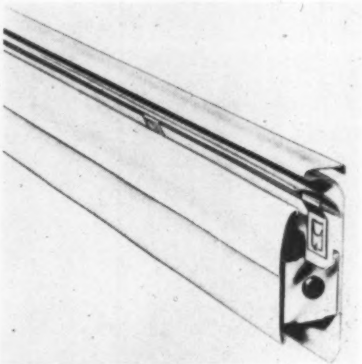
. . . for identification of seat type and coupling threads without disassembling product. Units are in permanent electroplated colors. — *Catawissa Valve & Fittings Co., Catawissa, Pa.*



Baseboard Damper . . .

. . . features opening with unlimited settings possible between open and closed positions. Unit snaps into place under a friction plate which is inserted in the bracket punch-out of firm's model "L Heatrim" baseboards. — *American-Standard Plumbing & Heating Div., 40 W. 40th St., New York 18.*

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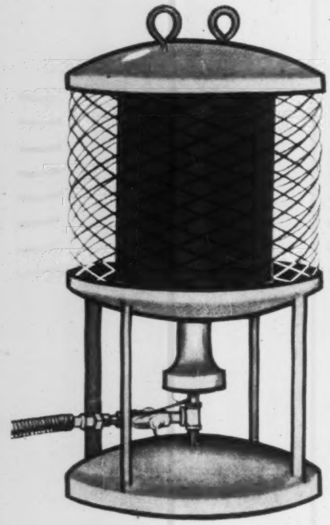

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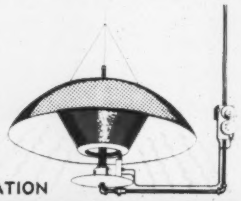

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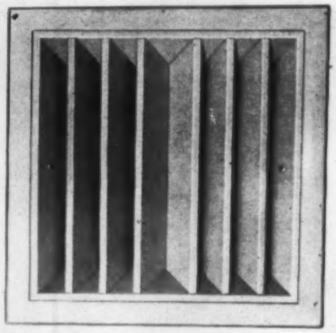

Ceiling Diffusers . . .
. . . two models available in both square and rectangular designs. Type "KO" is a perforated unit and type "KSS" is vari-pattern (shown). Standard finish is baked enamel. — *Connor Engineering Corp., Danbury, Conn,*

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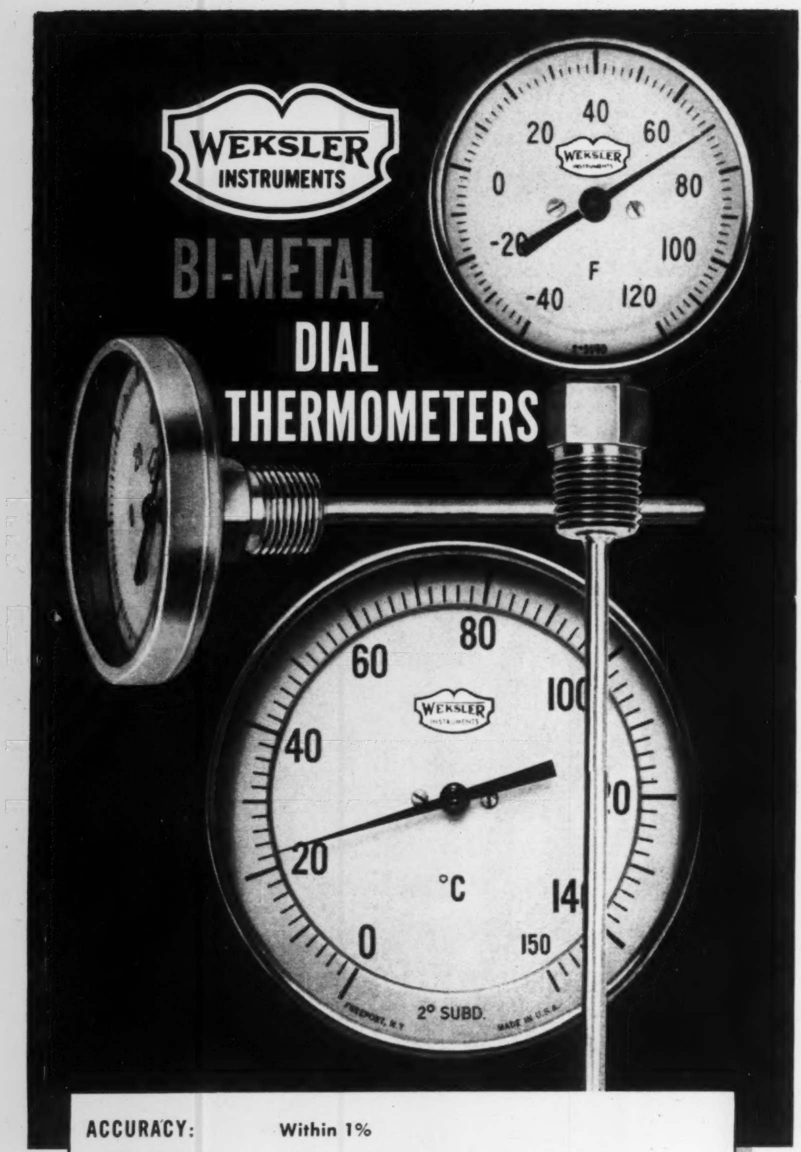

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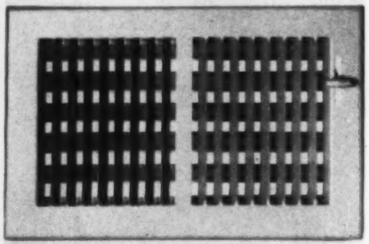

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. . . shallow-valve units feature a multi-louver damper. Available in four sizes from 8 × 6 in. to 14 × 6 in. Face vanes set at 45 deg angle and ½ in. apart. — *Lima Register Co., Lima, O.*

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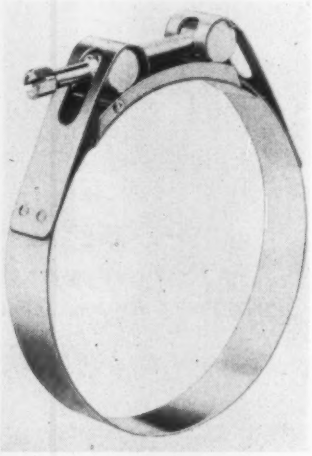

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. . . for applications in heating, ventilating, and air conditioning systems. Strap and bridge made of 430 stainless steel; nut, lug, and screw made of cold-rolled steel, cadium plated. Catalog sheet No. OEM-760 sent on request. — *Wittek Mfg. Co., 4305-43 W. 24th Place, Chicago 23.*

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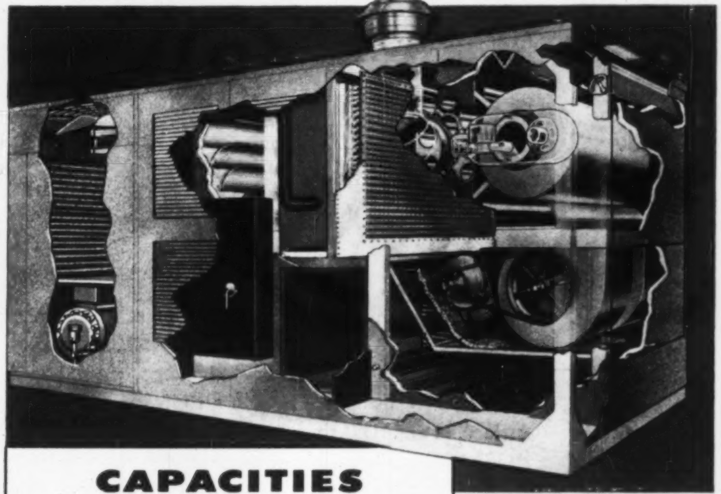

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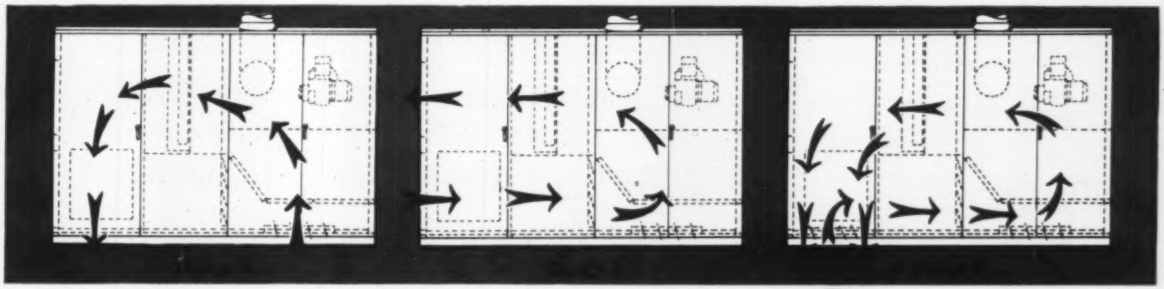
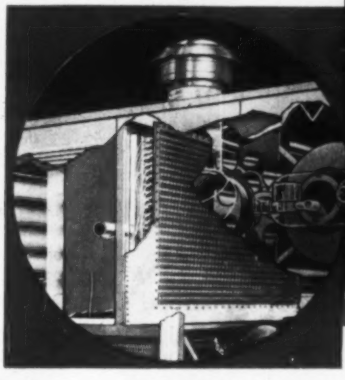
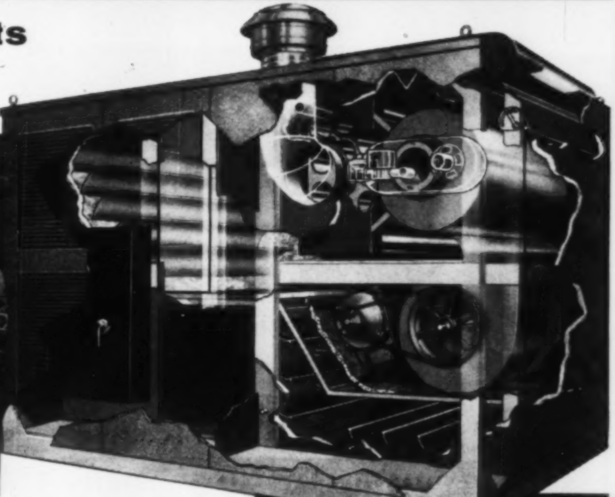
COOLING (air or water) 5 ton to 40 ton.



YR-H series heating units with provisions for future cooling



Series YR-E has evaporator coil installed



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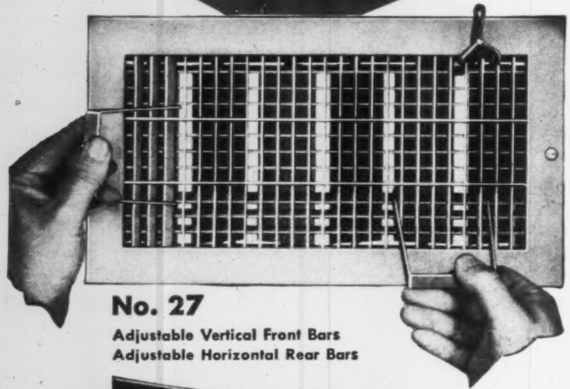

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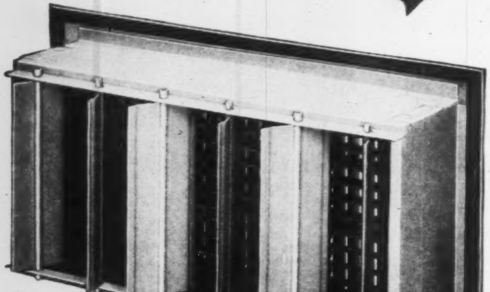
Adjustable Horizontal Rear Bars



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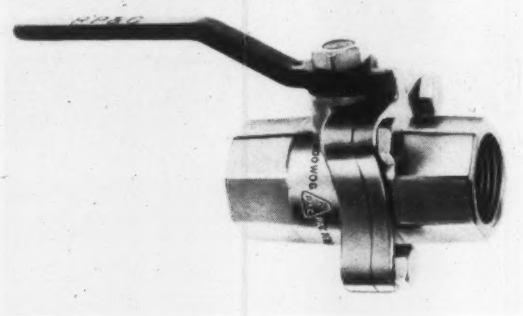

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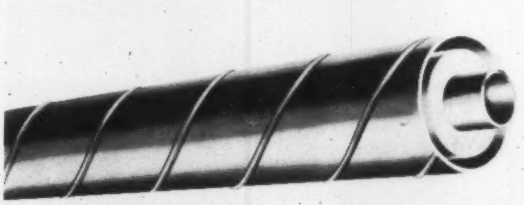

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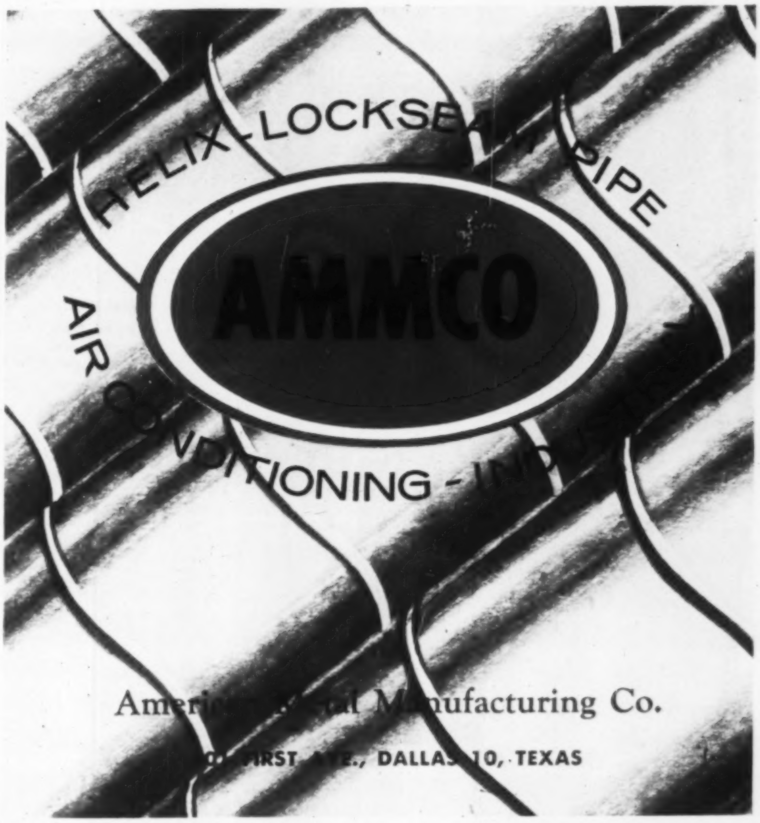
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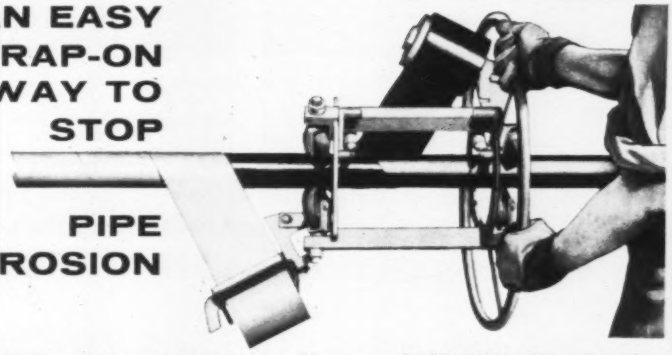

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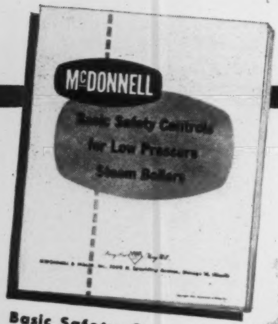

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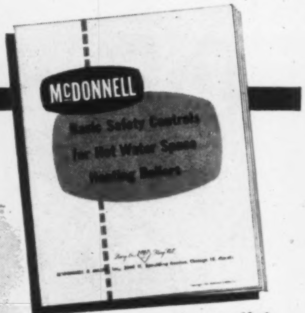

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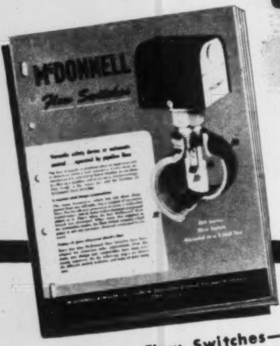

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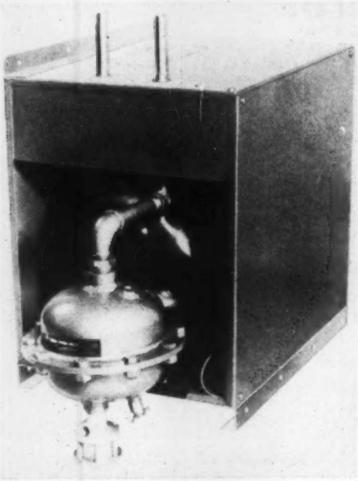
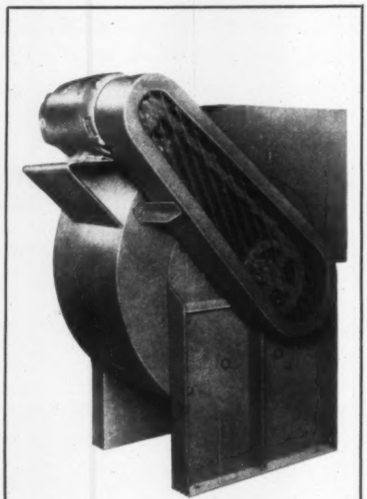
By__________

Mail to: McDonnell & Miller, Inc., 3500 N. Spaulding Ave., Chicago 18, Ill.



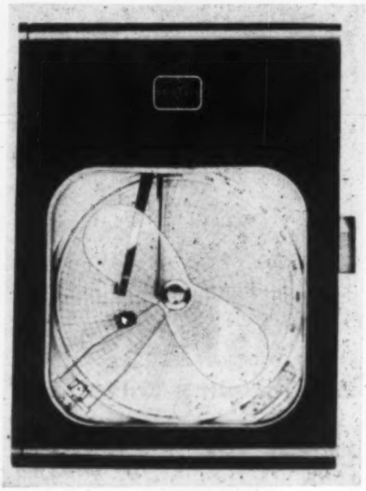
Refrigerant Dehydrator . .

. . .for protecting pneumatic controls used in connection with air conditioning and ventilating systems. Rated capacity of 10 scfm at 100 psig, unit drys air by mechanical refrigeration. — *Hankison Corp., College & Pike, Canonsburg, Pa.*



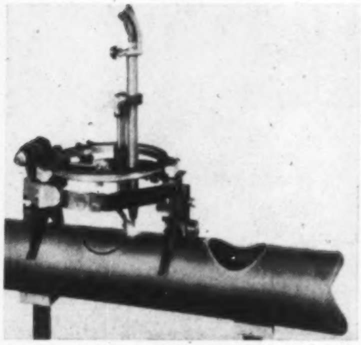
Centrifugal Fans . . .

. . .with motors mounted on fan housing for conservation of floor space. Units furnished with forward curve low tip speed wheels or backward curve non-overloading wheels. — *Champion Blower & Forge Co., Inc., Lancaster, Pa.*



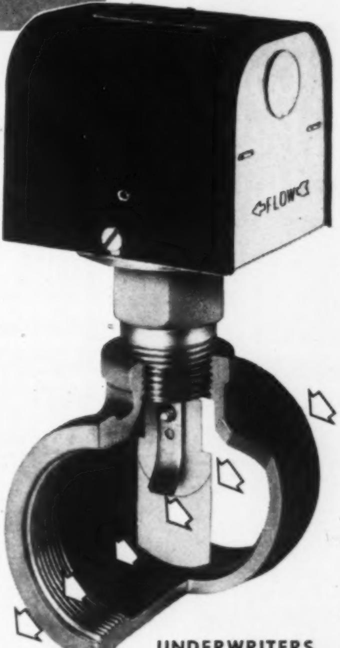
Recorder-Controller . . .

. . . single-case time-program unit in firm's series "500" line measures and controls temperature, pressure, flow, liquid level, and humidity. Recorder chart and program cam independently driven making it possible to record repetitions of the program on a single chart. Pneumatic or electronic control available. — *The Bristol Co., Waterbury 20, Conn.*



Hole Cutter . . .

. . . for cutting 90 deg holes in pipe, tanks, and flat plate. Three sizes permit cutting perpendicular holes to 18 in. in diameter without cams, patterns, or layouts. Unit may be used with electric drive or operated manually. Cutting accomplished with an oxygen, acetylene torch arrangement. — *Steffan Mfg. Corp.*, 1585 *S. Lincoln Ave., Salem, O.*



McDONNELL
Flow Switches

FS4 Series Flow Switch shown mounted in a 2 inch Tee

Here's what they do!

What you see here is a compact, well-built switch that makes or breaks a circuit (as required) when liquid flows or stops flowing. It's an economical and positive way to start or stop anything electrically operated. Just to highlight a few uses:

to actuate a signal light—signal an attendant to make the right moves in operating valves, pumps and the like—signal him when flow stops in a water cooled compressor, water cooled bearing and so on.

to sound an alarm—when flow stops in a process system or in any water cooled devices.

to start or stop motors—start pumps in sequence in multiple stage flow systems; start standby pumps; stop automatically controlled units if cooling water system fails; stop compressors in cooling systems when flow stops.

to start or stop automatic burners—start a booster heater when water draw occurs, stop burner if flow is improperly retarded; make sure of circulation in a boiler before burner is permitted to start.

to actuate metering device—open valve in chemical feeder line; start mixing in secondary line whenever flow starts in primary line.

UNDERWRITERS LISTED

Positive snap action switch. Easy to install and wire. Segmented paddle fits any pipe from 1" through 3". Unit shown handles pressures to 100 psi, temperatures to 300° F., in these types:

FS4-3—SPDT switch. Opens and closes two separate circuits with flow; closes and opens same two circuits with no flow.

FS4—Closes with flow; opens with no flow.

FS4R—Opens with flow; closes with no flow.

NOTE: Model E-2 available for larger pipes, pressures to 150 psi.

McDONNELL & MILLER, *Inc.*
3500 N. Spaulding Ave., Chicago 18, Ill.
Doing One Thing Well
REG. U. S. SAFETY CONTROLS PAT. OFF.

Coupon brings bulletin

—covering design, construction, electrical ratings, dimensions, typical applications.

Please send me a copy of Flow Switch Bulletin FS1-A.

Company____________________

Address____________________

City, Zone, State____________________

By____________________

Mail to: McDonnell & Miller, Inc., 3500 N. Spaulding Ave., Chicago 18, Ill.

There's a
WEINMAN

Condensate
Return
Unit
for
every
"wet"
heating
system
WEINMAN

EFFICIENT . . . DEPENDABLE
Weinman Types ACV and ADV Condensate Return Units are a wise investment in fast, trouble-free condensate return and overhead return of water or other liquids in gravity circulating systems.

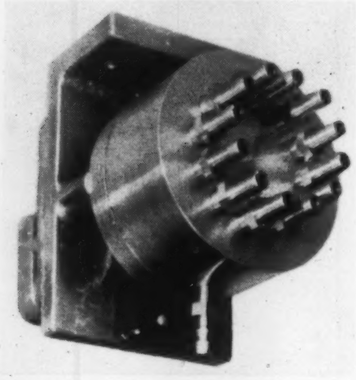
SINGLE AND DUPLEX PUMP MODELS
Weinman designs single pump models to meet standard requirements; duplex pump units for systems with heavy condensate loads and other liquid return or where a standby pump is needed. Both types handle liquids to 200° F. under hard, continuous service.

STEEL OR CAST IRON RECEIVERS
Both units are available with either steel or cast iron receivers to meet specific requirements for handling different liquids.

BOILER FEED UNITS
Either model converts to an efficient boiler feed unit by adding a solenoid-operated make-up valve.

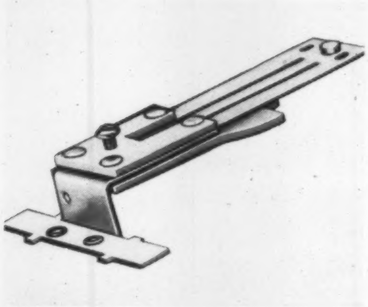
Weinman Condensate Return Units are rated up to 65,000 sq. ft. EDR at 60 psi. For complete information write for Bulletins 900 and 910 or call your Weinman pump specialist. He's in the Yellow Pages.

THE WEINMAN PUMP MFG. CO.
290 SPRUCE STREET COLUMBUS 15, OHIO
CENTRIFUGAL SPECIALISTS
MEMBER



Gas Sampling Valve . . .

. . . for automatic gas sampling or automatic sample feed to gas chromatographs or mass spectrographs. Unit has 12 intake ports and one vacuum port, each tapped for 1/8 in. standard pipe and supplied with hose fittings installed. Air from 12 different locations can be programmed to one central analyzer. — *Gelman Instrument Co., 106 N. Main St., Chelsea, Mich.*



Bimetal Thermostat . . .

. . . snap action blade device for controlling temperatures in air conditioning equipment and other applications. Range of calibration is from 0 to 250 F, adjustable range 50 F, calibration point tolerance ± 5 F standard with ± 2 F optional. Differential 3 to 25 F. Rated up to 200 w at 240 v. Bulletin AJT-1 sent on request. — *RBM Controls Div., Essex Wire Corp., Logansport, Ind.*

FLUOR
COOLING
TOWERS

*
You'll get more cooling at lower cost, and longer tower life under all operating conditions with Fluor Cooling Towers. From heavy industrial installations to light central station air conditioning and refrigeration units, there's a Fluor Cooling Tower to meet your specific needs.

higher performance

lower maintenance cost

built-in permanence *

Fluor PRODUCTS COMPANY COOLING TOWERS

FOUNDER MEMBER CTI COOLING TOWER INSTITUTE

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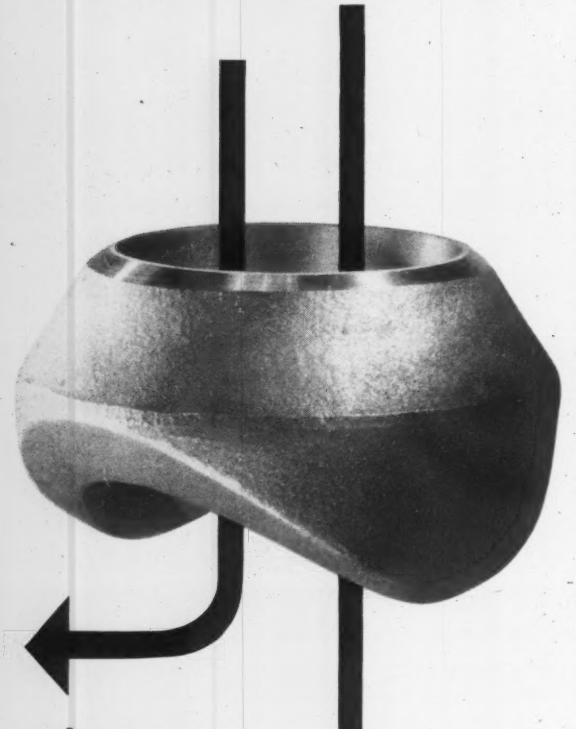
GENERAL OFFICES: P. O. Box 1267, SANTA ROSA, CALIFORNIA

BONNEY WELDOLETS



cut corners safely...

ON ALL 90° BRANCH PIPE CONNECTIONS

Competitive economic times like these make cost cutting mandatory. Reduce piping costs by using Weldolets instead of welding tees for all full size and reducing branch connections. Contractors and owners are saving thousands of dollars on piping jobs by switching to Weldolets. Are you? Write for information.

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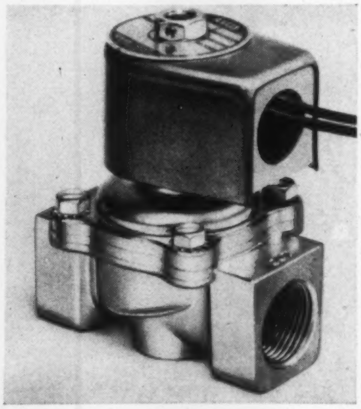
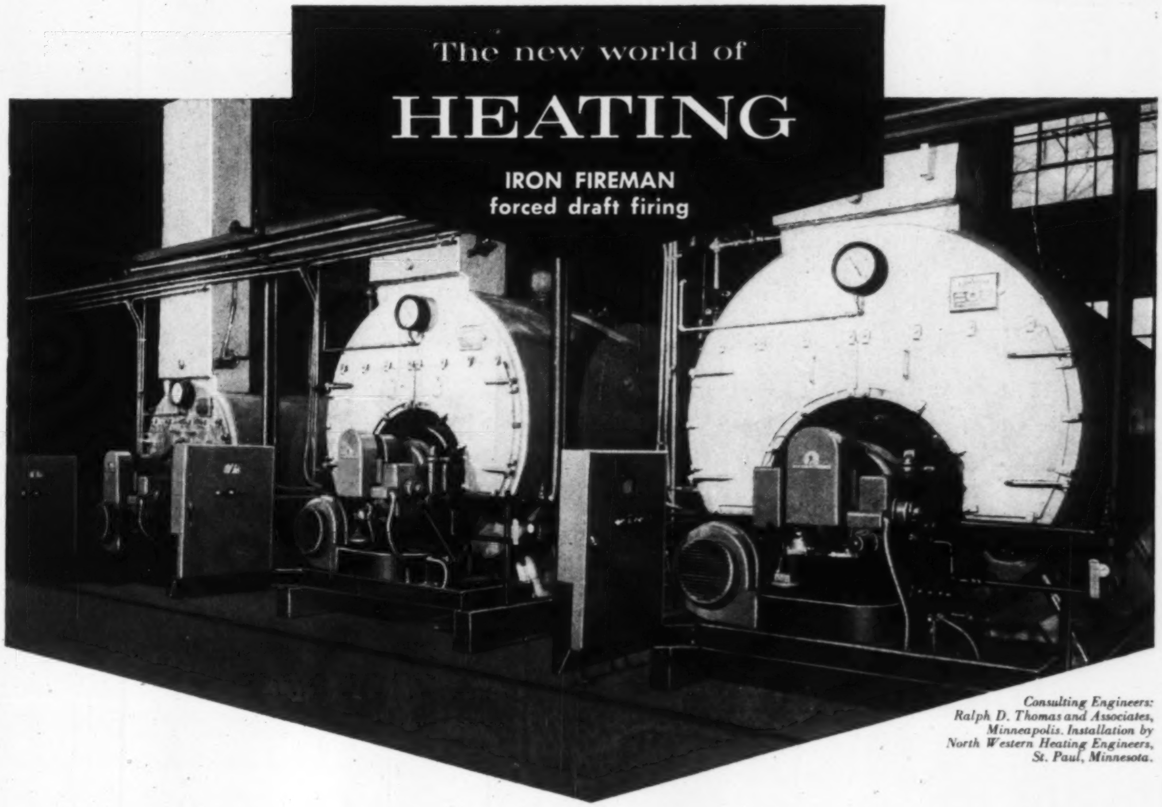


Solenoid Valve . . .
. . . primarily for handling gas to industrial and commercial type boilers and furnaces, but can be used in any low pressure control system. Forged brass body and bonnet, soft composition disc, and 3/4 in. pipe connections. — *Automatic Switch Co., Florham Park, N.J.*

Air Pressure Regulator . . .
. . . provides a continuous metering of air or other gases into any pipeline carrying liquid flow under pressure. Unit can handle water flow from 360 to 6000 gph at pump pressures from 25 to 90 psi. — *Nielsen Mfg. Co., P.O. Box 5083, Eastmont Station, Oakland, Calif.*



Consulting Engineers: Ralph D. Thomas and Associates, Minneapolis. Installation by North Western Heating Engineers, St. Paul, Minnesota.

This new heating plant increased boiler capacity 70%, yet will return the investment in 7 years

The Minnesota Masonic Home in Minneapolis faced a problem that is familiar to many owners of old heating plants—should the old plant be modernized or replaced?

After a thorough study of several alternatives, the engineering firm of Ralph D. Thomas and Associates recommended a complete replacement. The three Iron Fireman-Kewanee boiler-burner units shown above provide extra capacity for future needs, while cutting steam costs so sharply that engineers estimated they will pay for themselves in seven years.

COMPLETE, PACKAGED FIRING SYSTEM

The first big saving was in installation—the three units were moved in intact. No boiler settings, no brickwork, no special wiring required. The factory assembled units included boilers, burners, forced draft air supply, wired and tested control panels and fuel systems, all mounted on a permanent base. Low operating costs were the result of high combustion efficiencies (reduced fuel bills) and low maintenance. With packaged installation, factory responsibility covers practically the entire job.

FOR OIL, GAS OR DUAL-FUEL FIRING

Oil models fire any grade of oil from No. 2 to No. 6. Gas models take any type of high or low pressure gas. With dual-fuel models, fuels can be switched at a moment's notice with either manual or automatic controls.

Mail coupon for full information.

IRON FIREMAN

HEATING AND AIR CONDITIONING
AIRCRAFT COMPONENTS AND EQUIPMENT
MISSILE AND AIRCRAFT GYROSCOPES
ELECTRONIC EQUIPMENT
CONTROL INSTRUMENTS

Iron Fireman Mfg. Co., 3103 W. 106th St., Cleveland 11, Ohio
(In Canada, 80 Ward St., Toronto)

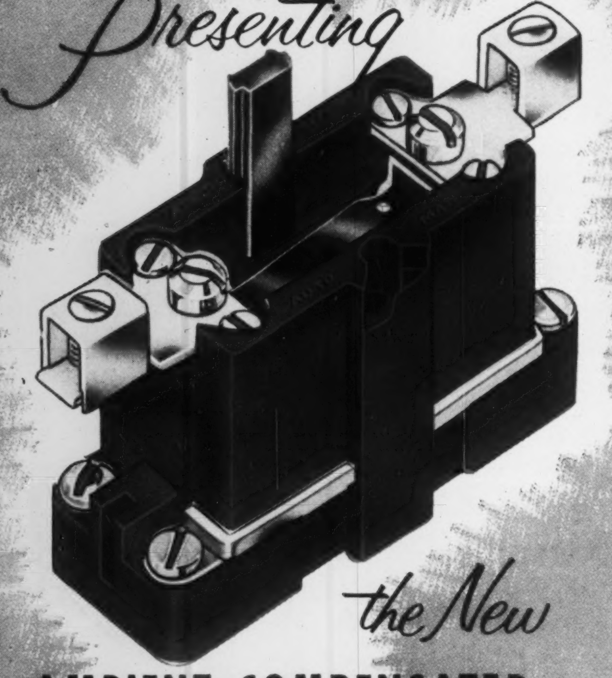
Please send complete technical description and specifications on Iron Fireman forced draft firing.

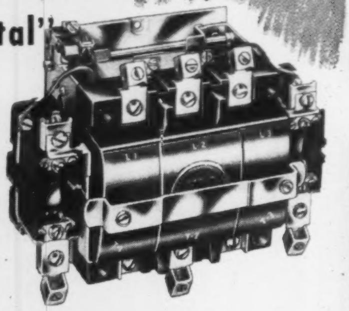
Name________________________________

Firm________________________________

Address______________________________

City____________________State or Prov.__________





AMBIENT COMPENSATED OVERLOAD RELAY with "Balancing Bi-Metal" Exclusive with ARROW-HART

RELIABLE OVERLOAD PROTECTION FROM −20°F TO +165°F!

FOR ALL ARROW-HART "RA" MAGNETIC STARTERS, NEMA SIZES 0 THROUGH 5!

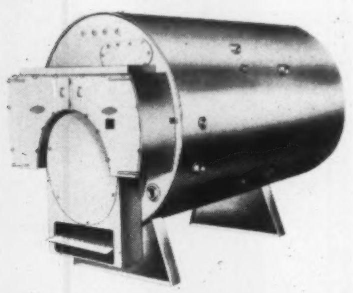
Now, for the first time, you can give your customers reliable overload protection regardless of heat or cold . . . because this compact new A-H Overload Relay operates on the same time curve at all temperatures from −20°F to +165°F. Simple, rugged, dependable mechanism features the exclusive A-H "Balancing Bi-Metal." Much smaller than any other comparable units, these relays have the same base size as standard A-H Overload Relays, use the same regular or quick-trip heaters, and can be used on any A-H Type "RA" Magnetic Starters. Compensation is completely automatic . . . no field adjustment is needed. Available with ratings from 25 to 300 amperes, continuous current. Ideal for use outdoors, in installations subject to wide seasonal changes in ambient temperature . . . or indoors, in installations subject to wide daily changes!

Write today for complete information. The Arrow-Hart & Hegeman Electric Co., Dept HPAC 103 Hawthorn St., Hartford 6, Conn.

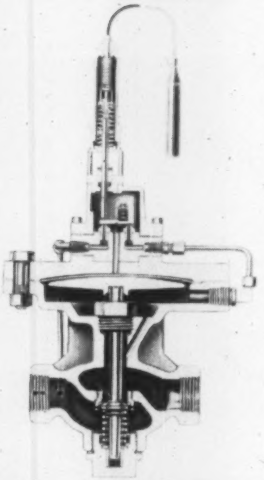
ARROW AH HART
Quality since 1890

MOTOR CONTROLS · ENCLOSED SWITCHES
APPLIANCE SWITCHES · WIRING DEVICES

ARROW AH HART

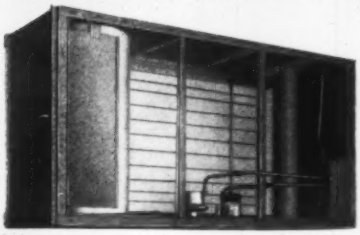


Scotch Marine Boilers . . .
. . . with semi or full wet back styles in 42 sizes from 1780 through 64,280 sq ft steam or 2850 through 102,850 sq ft water. Unit also offered in a "semi-package" in which all controls and accessories except burner are factory installed. Six page bulletin sent on request. — *Federal Boiler Co., Granite and West Sts., Midland Park, N.J.*



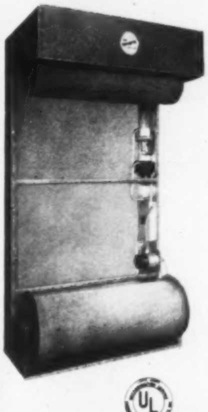
Temperature Regulators . .
. . . single seated, self-contained units are diaphragm actuated with a unique lever-type internal pilot. Available with cast iron or bronze bodies, with screwed or flanged ends in a range of sizes from ½ to 4 in. Inlet pressures up to 175 psi, temperatures to 500 F. — *Leslie Co., 105 Delafield Ave., Lyndhurst, N.J.*

'round the world...
CONTINENTAL *clears the air*



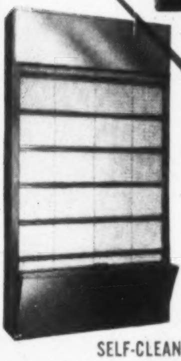
HORIZONTAL CONOMATIC
Automatic Roll-Away Type

Space-saving, minimum-maintenance filter with Continental's DYCON roll media. All metal parts galvanized or cadmium-plated. Also available: horizontal model of CONOMANUAL, hand-operated. Ask for Bulletin No. 822a



CONOMATIC ROLL-AWAY TYPE

Automatically controlled, clears air at lowest cost per cubic foot of any filter in its classification. Dependable automatic performance with minimum of maintenance attention. Ask for Bulletin No. 819a



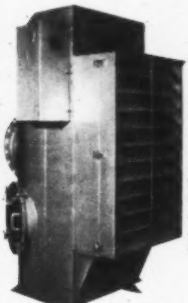
SELF-CLEANING AUTOMATICS

Patented media design and unique "soak-then-flush" action provide thorough self-cleaning. Ferris wheel feature eliminates reversing media to direction of air flow in back curtain—no dust can be blown back into clean air stream. Ask for Bulletin No. 210

CONOMANUAL
hand-operated

A roll-away, synthetic media, viscous impingement filter . . . hand-operated to combine maximum economy with roll-away convenience. Ask for Bulletin No. 850a Horizontal models also available.

AIR
CONTINENTAL
FILTERS



HEAVY DUTY ENGINE AIR INTAKES

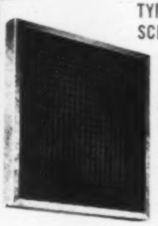
All advantages of Continental's Self-Cleaning Automatics assure maximum protection with minimum maintenance cost and effort. Ask for Bulletin No. 210

E-Z-WASH UNIT FILTERS

Continental's patented media assures high efficiency, easy washing, freedom from clogging, and exceptional dust-holding capacity. 100% Aluminum construction available. Ask for Bulletin No. 423

DYCON
CA-20, CA-24

Dry-type, synthetic media, extended surface unit filters offer high quality air cleaning and large dust-holding capacity. Easily rinsed clean in tap water—cuts maintenance costs. Ask for Bulletin No. 431

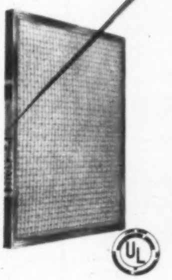


TYPE LV SCREEN WIRE

This is graduated mesh-size in this formed screen-wire, viscous impingement, low velocity type air filter. Available in 2- or 4-inch thickness, all standard sizes. Special sizes on order. Galvanized construction! Ask for Bulletin No. 600a

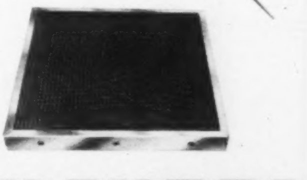
E-Z-OIL AEROSOL BOMB

For simple finger-tip re-oiling of viscous type unit filters after washing. Ask for Bulletin No. 205



TYPE DY DYCON

Permanent 1" synthetic fiber filter in rust-proof aluminum frame easily rinses clean under open water faucet or nozzleless hose. Exceptional dust-holding capacity means infrequent servicing. Made in any desired size. Ask for Bulletin No. 570

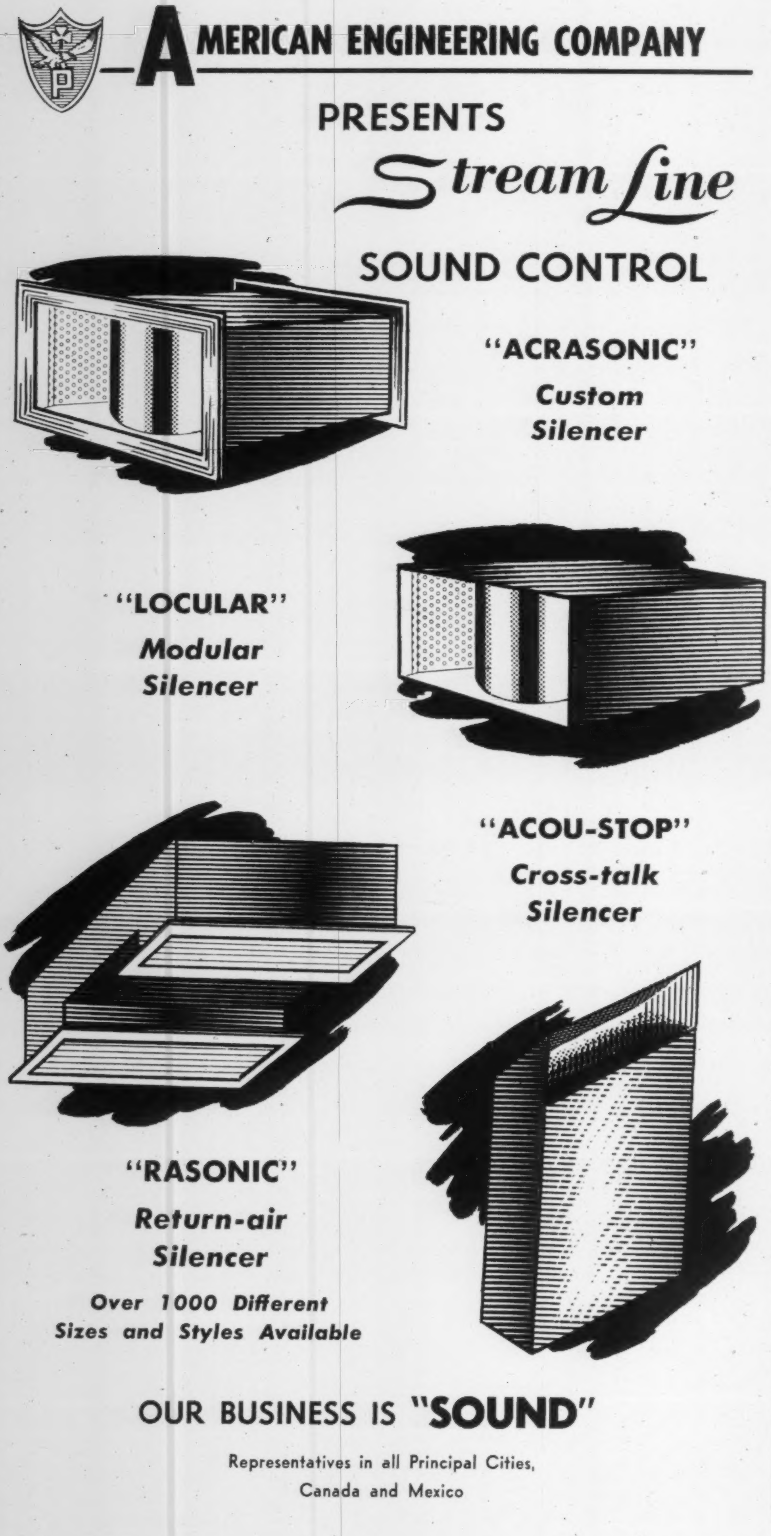


TYPE GW E-Z-WASH GREASE FILTERS

Unique media design is particularly efficient for grease filtering. Large, smooth-walled passages eliminate clogging problem of other filters. Sturdy construction allows for repeated washing and cleaning. Ask for details

REFER to catalog in Sweet's Plant Engineering File
CONTACT the Continental Sales representative in your area
WRITE direct for bulletins, estimates, other information

CONTINENTAL
AIR FILTERS, Inc. LOUISVILLE 1, KY.



AMERICAN ENGINEERING COMPANY

PRESENTS

Stream Line

SOUND CONTROL

"ACRASONIC"
Custom
Silencer

"LOCULAR"
Modular
Silencer

"ACOU-STOP"
Cross-talk
Silencer

"RASONIC"
Return-air
Silencer

Over 1000 Different
Sizes and Styles Available

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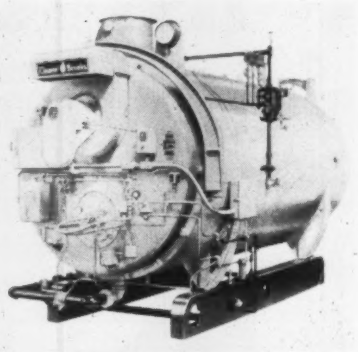
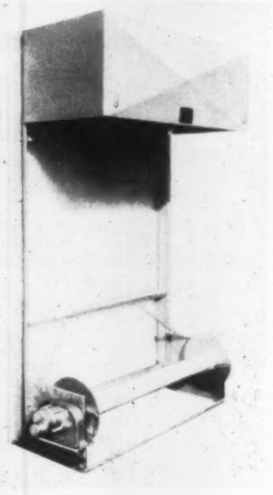


Packaged Boilers . . .

. . . for high or low-pressure steam applications can be fired with oil, gas, or gas-oil. Available in 90 models, 18 sizes, from 15 to 600 hp. Features four-pass, forced draft construction and 80 percent overall operating efficiency. Bulletin sent on request. — *Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee* 12.



Air Filter . . .

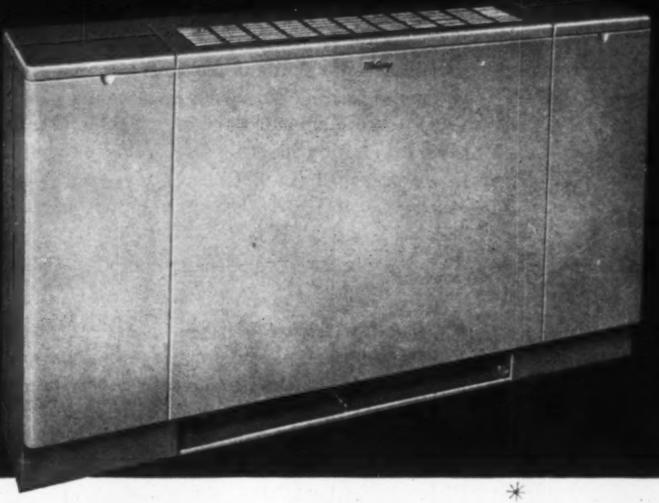
. . . with filtering media in a roll, unwinding from top. Roll consists of a glass filter material 65 ft in length and unwinds automatically when pressure drop reaches a pre-set limit. Four models with automatic drive or manual operation. Available in vertical sections in 3, 4, or 5 ft widths; heights range from 5 to 15 ft in increments of 4 in. — *Farr Co., P.O. Box* 90187, *Airport Station, Los Angeles* 45.

BUILT-IN QUALITY
BUILT-IN PERFORMANCE

with

McQuay *individual room*

Seasonmakers

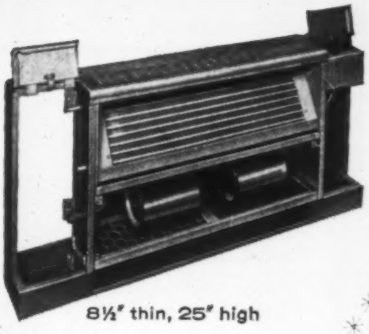


NOW 4 MODELS

220 to 1240 CFM

Extra large piping compartments, 8½" thin design, complete slide-out fan deck assembly, motor disconnect plug, field reversible coils, full rated capacity and day-to-day quiet, efficient operation . . . these are but a few of the many reasons why so many engineers, contractors and building operators are specifying and installing McQuay thin-line design, individual room Seasonmakers.

Availability in four types and seven sizes and faster, easier installation make them preferred for apartments, hotels, motels, offices or any installation utilizing a central station heating and cooling system. Hideaway and ceiling models range from 220 to 640 cfm. Floor and basic models from 220 to 1240 cfm. Contact your local McQuay representative, or write McQuay, Inc., 1601 Broadway Street N. E., Minneapolis 13, Minnesota for detailed specifications.



8½" thin, 25" high

McQuay Means Quality

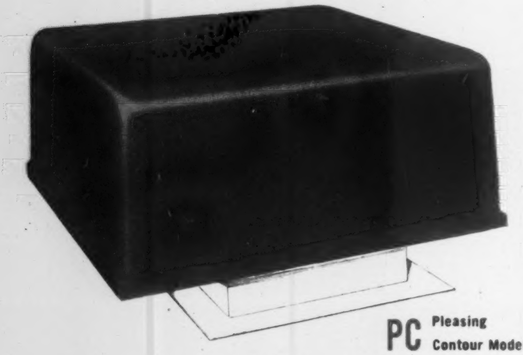
McQuay INC.

AIR CONDITIONING • HEATING • REFRIGERATION

Introducing . . .

DAVIDSON

Roof Exhaust Fans with Fiberglass Housings in COLOR!



PC Pleasing Contour Model

Now . . . an extensive line of low-profile PC Fans is available with your choice of six sealed-in colored housings: light blue, dark blue, tangerine, buff, gray and white.

These new housings deaden sound, require no maintenance and withstand all elements. This new dimension in styling . . . plus all the advantages of Davidson Hyduty PC Fans:

- **Famous Davidson rugged construction**
- **NEMA Standard Motors**
- **Vibration-isolated construction**
- **Ratings conform to Standard Test Code**

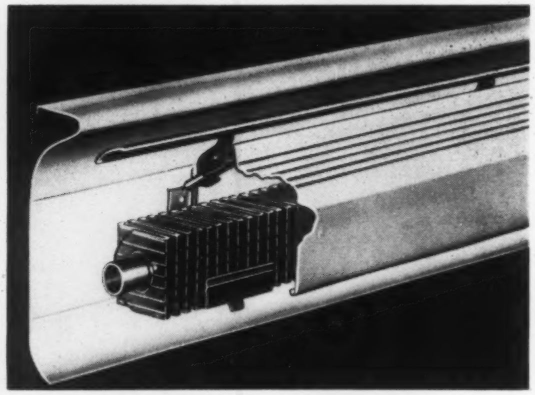
For complete facts, write:

DAVIDSON FAN CO.

Dept. A, 213 California St.
Newton 58, Mass.

The original manufacturer of roof fans — Founded 1915

Charter Member AMCA

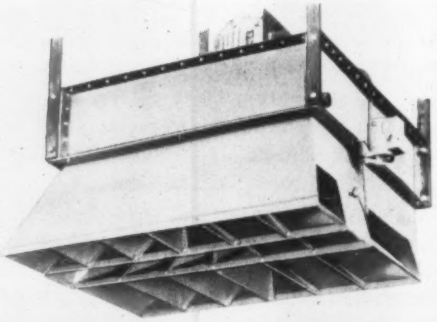


Heating Element Hanger . . .

. . . for firm's baseboard heating elements. Cradle slide permits free longitudinal movement of element during periods of heating expansion and cooling contraction. Designed to eliminate metallic noises. Unit snaps into place on existing baseboard units and is furnished on firm's packaged heating elements. — *Edwards Engineering Corp., 101-B Alexander Ave., Pompton Plains, N.J.*

Pipe Fittings . . .

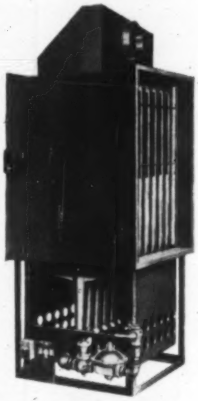
. . . polypropylene plastic units for industrial piping in low-pressure ambient-temperature applications. Sizes for 2 and 4 in. diameter pipe in Schedule 40 and 80 wall thickness. — *Tube Turns Plastics, Inc.,* 2929 *Magazine St., Louisville* 11. *Ky.*



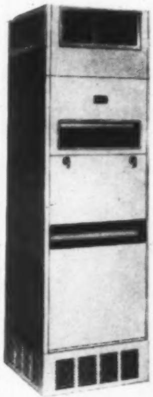
Unit Heater . . .

. . . for use above door of plant shipping and receiving areas to stop cold drafts when door is open, or supplement plant heating system when door is closed. Automatically controlled damper adjusts accordingly to the different situations. Steam or hot water operated, units in 10 sizes for mounting heights to 22 ft and floor area coverage up to 60 × 132 ft mounted for room heating, or 33 × 180 ft mounted for perimeter heating. — *L. J. Wing Mfg. Co.,* 2300 *N. Stiles St., Linden, N.J.*

STAINLESS STEEL HEAT EXCHANGERS

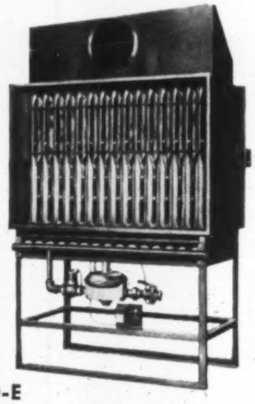


SED-S
Duct Furnace, 45,000 to 675,000 BTU Imput—End Surface



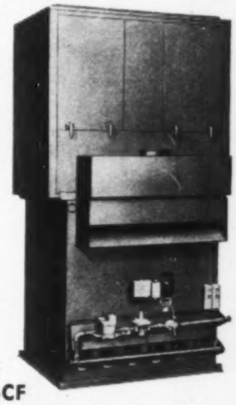
SEU-V
Vertical Unit Heater, 70,000 to 245,000 BTU Imput

SED-VF
UP Vertical Duct Furnace, 70,00 to 280,000 BTU

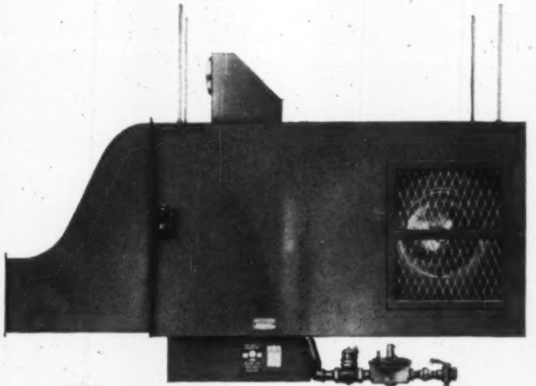


SED-E
Duct Furnace, 45,000 to 675,000 BTU Imput—Side Surface

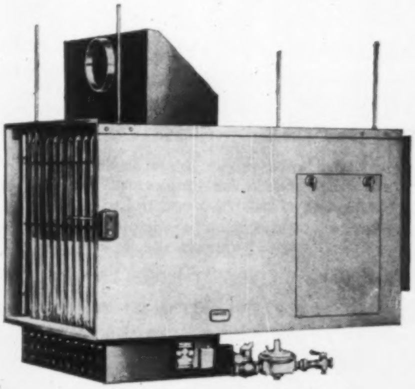
SEC
Forced Air Furnace, 70,000 to 245,000 BTU Imput



SED-CF
Counter Flow Duct Furnace, 70,000 to 280,000 BTU Imput



SEU
Suspended Unit Heater, 80,000 to 480,000 BTU Imput



SES
Suspended Forced Air Furnace, 80,000 to 480,000 BTU Imput

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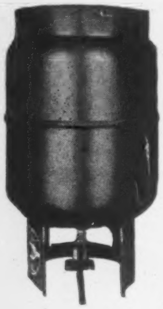
FINGER OPERATED NUT NOW SUPPLIED TO CONNECT HOSES QUICKLY

Stock sizes in REFRIGERANT 22 capacities of: 50lb. - 25lb. - 15lb.

Air conditioning equipment manufacturer's brand name and part no. shown on label.



Convenient for liquid charging (as shown) as well as gas charging (in standing position).

Stack conveniently to save space.

- RIGID MOISTURE AND QUALITY CONTROL
- Blue Plastic seal on valve outlet is your assurance of maximum dryness quality and purity.
- Seals are printed "MAXIMUM DRYNESS—FACTORY SEALED."
- LESS WASTE BECAUSE OF OVER OR UNDER CHARGE
- Choice of small cylinder sizes to suit each system. (Less cost per cylinder.)
- EASY TO HANDLE — lightweight, small cylinders with built-in hand grips. (50 lb. size only 22 lb. empty.)
- NO HOOD CAPS TO LOSE — Valve protected by permanent collar.
- STACKING RINGS SAVE VALUABLE SPACE
- Valve protection collar also serves as stacking ring. Uniform ring on all sizes enables mixed stacking.
- CAN BE USED IN BOTH UPRIGHT POSITIONS
- Equally convenient for gas or LIQUID CHARGING.
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- Sturdy cylinder valve complete with 1/4" outlet and finger-operated knurled outlet nut ready for quick connecting and disconnecting charging hose. No wrenches needed to remove or attach nut.
- YOU CAN DELIVER AIR CONDITIONING SYSTEM COMPLETE WITH FULL REFRIGERANT CHARGE ANY TIME OF THE YEAR
- NO FREIGHT OR DEPOSIT PROBLEMS ON CYLINDERS
- Prices include freight on full cylinders and on return of empties.
- No cylinder records needed — deposit of $12.00 each for all three sizes of cylinders refunded regardless of cylinder number.

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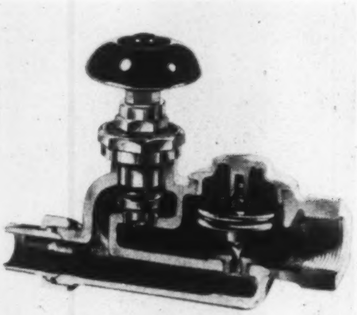
1107-21 NORTH HOWARD STREET PHILADELPHIA 23, PENNA.
U. S. Patent No. 2956708 Foreign Patents applied for

EQUIPMENT DEVELOPMENTS

Continued

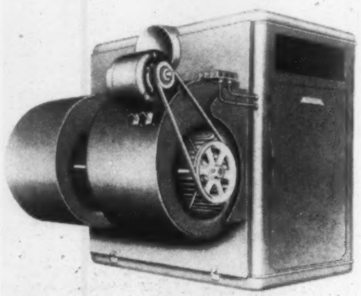


Steam Valves . . .

. . .for steam heating systems that uses a thermostatic trap and radiator supply valve. Trap part keeps downfeed supply riser cleared of condensate; valve part governs steam admission to radiator. Bulletin 917-60 sent on request. — *Modine Mfg. Co., 1500 DeKoven Ave., Racine, Wis.*

Duct Heater . . .

. . . for installations with a central air supply. Model 330 features a trialloy type heat exchanger with each tube fired individually, a reversible gas manifold, and draft diverter. Available in eight sizes ranging from 50,000 to 250,000 Btu per hr. — *Bryant Mfg. Co., 2020 Montcalm St., Indianapolis 7, Ind.*



Dual Blowers . . .

. . .for use with firm's blower type gas-fired unit heaters and modular duct furnaces. Blowers powered by a 1/2 hp motor, operating on a single shaft. — *Reznor Mfg. Co., 51 Union St., Mercer, Pa.*

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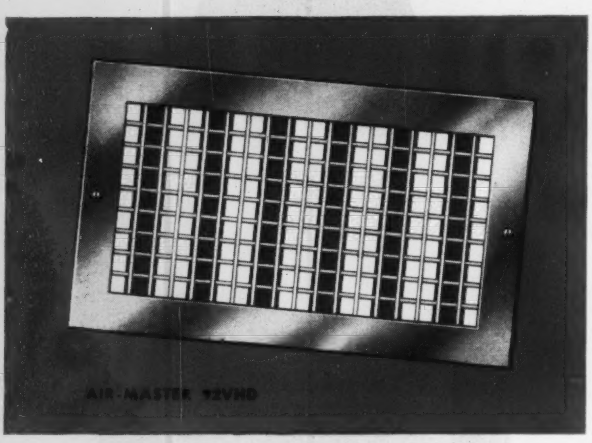

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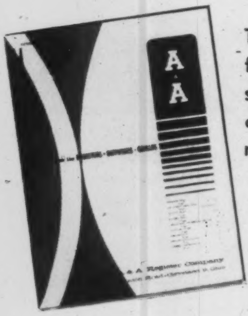

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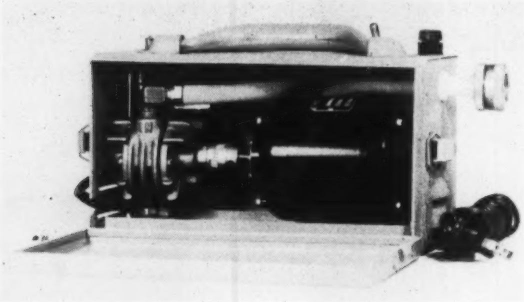
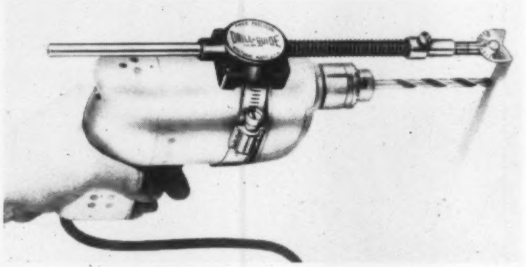


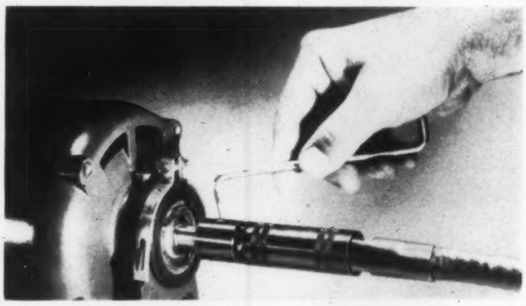
Air Sampler . . .

. . . for both continuous duty and survey air sampling. Draws up to 16 liters per min of air through filter paper. Sampler consists of a vacuum pump, flow meter, and filter holder. Operates on 110 v, 60 cycle with other voltages available. Split phase motor runs an oil-less carbon vane rotary positive displacement pump. Unit designed for 24 hr usage. — *Gelman Instrument Co., 106 N. Main St., Chelsea, Mich.*



Hand Drill Guide . . .

. . . for accurate drilling of straight holes in any direction, horizontal, vertical, angular, or for counter-sinking and reaming "in line." Unit attached to drill by a clamp. — *Ames Precision Machine Works, Waltham, Mass.*



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. . . standard packaged units include shaft, neoprene-covered casing, and standardized coupling. Shaft sizes from 0.150 to 0.500 in. in standard lengths. For high speed and continuous operation, units usable in either rotational direction. Bulletin sent on request. — *S. S. White Industrial Div., 10 E. 40th St., New York 16.*

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K-10	provides 4 classes of Solenoid coils for flow media temperatures from −60°F to 360°F...also waterproof types.	One
K-10	is available in many models, normally OPEN or normally CLOSED ...in combinations of solenoids, coils and body materials...choice of stainless steel or soft seats.	Some
K-10	resists corrosive fluids with optional *all* stainless steel lever acting solenoid valve.	No
K-10	operates under extreme pressures...up to 1000 psi.	No
K-10	includes built-in union for quick installation or removal without disturbing pipe line.	No
K-10	allows recirculation of heated semi-solid fuel *through valve body* when valve is closed to prevent sticking of internal mechanism.	No
K-10	has exclusive clamp ring coil jacket design for replacement of coils without danger of damaging other parts.	No
K-10	operates on simple 2-wire electric circuit – all voltages – AC and DC – explosion-proof housings.	Yes
K-10	is the *"original"* and only *complete* line of lever acting packless solenoid valves.	No

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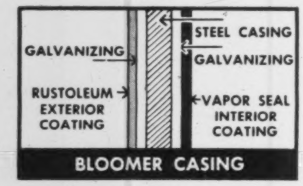
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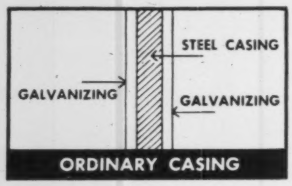
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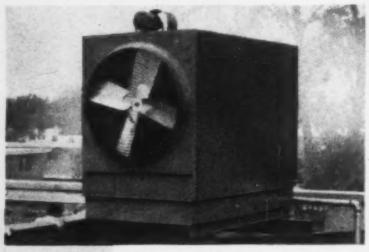

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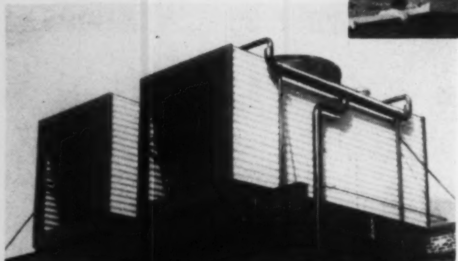

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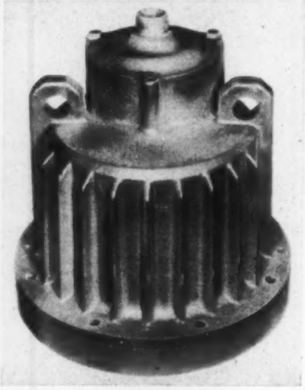

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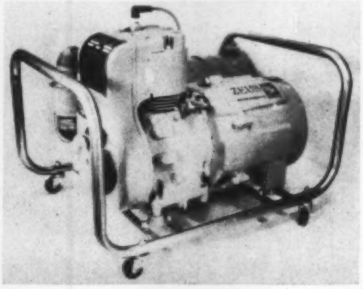
. . . submersible a-c units, pressure-proof, for close-coupling to centrifugal pumps operating in any depth of water, oil, or liquid chemicals. Available in sizes from ½ through 40 hp for operation from poly-phase power sources, and from ¾ through 5 hp for single-phase connection. Units rated at 55 C temperature rise for 30 minute duty in 40 C air, and for continuous duty in 40 C liquids — *Reliance Electric and Engineering Co.*, 24701 *Euclid Ave., Cleveland* 17.



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. . . with a permanent magnet alternator. Electric power generated by permanent magnet rotating field. Model "GW-300" rated at 3000 w, 115/230 v, 60 cycle, single phase, and is powered by one cylinder, four cycle air-cooled gasoline engine. Three power outlets: one 230 v twistlock and two 115 v three-prong sockets. — *Pesco Products Div., Borg-Warner Corp.*, 24700 *N. Miles Rd., Bedford, O.*

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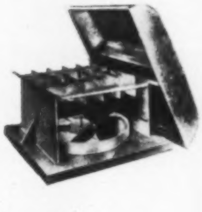
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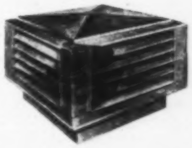
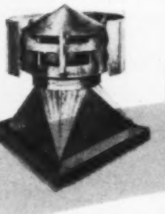

LOUVENT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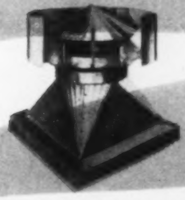
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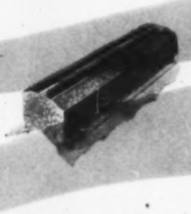
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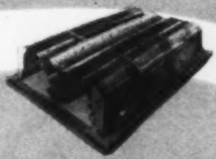
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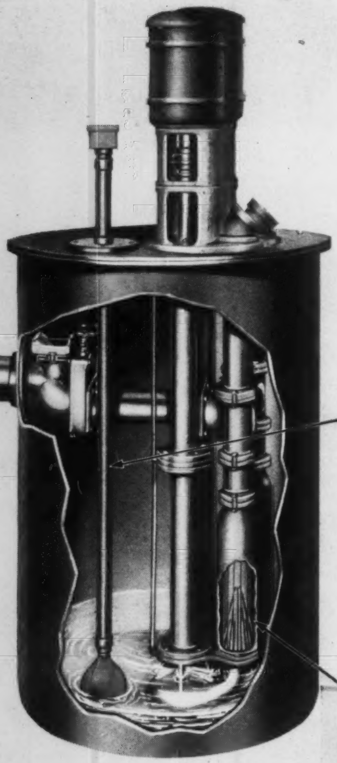

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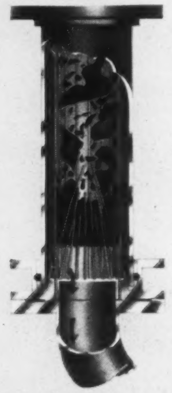

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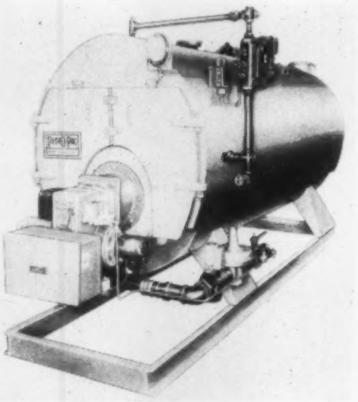

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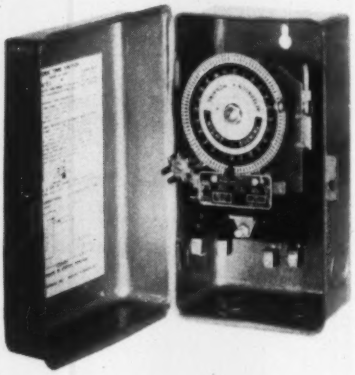
. . . available for low pressure steam or hot water. "Petro Pac 300" in 10 sizes from 20 through 100 hp, rated output from 670,000 to 3,350,000 Btu per hr. Three-pass wet back unit has operating efficiencies in excess of 80 percent, fired by light oil, gas, or gas-oil. — *Petro, 3710 W. 106th St., Cleveland 11.*



Time Control . . .

. . . for motorized valves of high pressure steam systems. Unit "1977-SKV1" opens valves with a pulse-like movement to permit gradual entry of steam. Douple-pole, double-throw switch has control to permit omission of operation on one or more days a week without altering master program. — *Heating Controls Div., Tork Time Controls, Inc., Mount Vernon, N.Y.*

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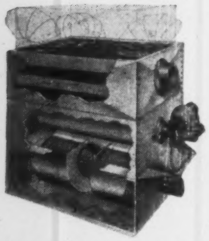
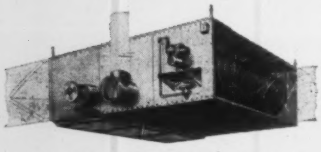


HI-BOY UNIT HEATER



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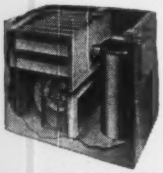
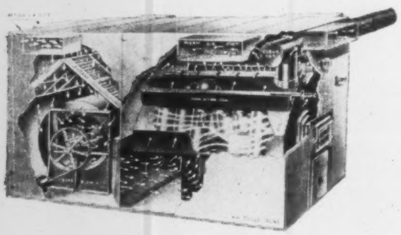


LO-BOY HEATER



8000 SERIES HEATER

SPECIFICATIONS and DIMENSIONS

HEATER				BLOWER‡			MAX. FUEL RATE§				DIMENSIONS		
Unit No.	Output Capacity BTU/Hr. †	Heating Surface Sq Ft	Btu per Sq Ft Heating Surface	Normal cfm 140° Dischg. Temp.	Assumed External Static In. Water	Motor hp	Oil gph	1000 Btu Gas cfh	LP Gas gph	Coal Lbs Per Hr.	H in.	L in.	W in.
Hi Boy & Horizontal Unit Heater—Oil & Gas for Churches, Schools, Commercial & Industrial Buildings													
U225	225,000	84	2700	2750	½	¾	2.0	280	2.8		66	48	23
U275	275,000	84	3300	3350		¾	2.5	350	3.5		66	48	23
U325	325,000	121	2700	4000		1	2.9	400	4.0		72	54	29
U400	400,000	121	3300	4900		1½	3.6	500	5.0		72	54	29
U500	500,000	182	2750	6100		1½	4.5	625	6.3		84	60	34
U600	600,000	182	3300	7300		2	5.4	750	7.5		84	60	34
U700	700,000	244	2850	8500		2	6.2	875	8.8		99	78	40
U800	800,000	244	3300	9800		2	7.2	1000	10.0		99	78	40
U950	950,000	334	2850	11600		3	8.5	1200	12.0		108	96	48
U1100	1,100,000	334	3300	13500		3	9.8	1375	13.8		108	96	48
U1300	1,300,000	455	2850	16000		3	11.6	1625	16.3		126	114	54
U1500	1,500,000	455	3300	18500		5	13.4	1875	18.8		126	114	54
U1725	1,725,000	606	2850	21,000		5	15.4	2150	21.5		180	130	60
U2000	2,000,000	606	3300	24,400		5	17.9	2500	25.0		180	130	60
U2500	2,500,000	910	2750	30,500		7½	22.3	3100	31.0		180	144	66
U3000	3,000,000	910	3300	36,500	↓	10	26.8	3740	37.5		180	144	66
Lo Boy Oil & Gas Fired for Large Residences, Small Churches, Schools, etc.													
H200	235,000	100	2350	2600	½	½	2.1	295	2.9		52	75	41
H250	275,000	125	2200	3300		¾	2.5	344	3.4		57	85	41
H300	340,000	136	2500	4000		¾	3.0	425	4.2		61	87	50
H350	400,000	152	2600	4600		1	3.5	500	5.0		61	87	50
H400	450,000	167	2700	5300		1½	4.0	560	5.6		61	87	50
H500	500,000	206	2750	6600		1½	4.5	625	6.2		74	91	60
H600	650,000	240	2700	8000		2	5.8	810	8.1		76	97	60
H700	750,000	280	2700	9200	↓	2	6.7	940	9.4		72	104	80
8000 Series Oil, Gas, Stoker or Hand Fired For Large Schools, Churches, etc.													
8032	400,000	133	3000	5300	½"	1.0	3.6	500	5.0	45	66	94½	51
8046	500,000	167		6600		1½	4.5	625	6.3	56	66	105	51
8060	600,000	200		8000		1½	5.4	750	7.5	67	66	126	51
8074	700,000	233		9200		1½	6.3	875	8.8	78	66	134	51
8075	840,000	280		11000		2	7.5	1050	10.5	100	80	140	76
8100	960,000	320		12500		2	8.6	1200	12.0	114	80	157	76
8125	1,080,000	360		14100		2	9.7	1350	13.5	129	80	180	76
8150	1,320,000	440		17300		3	11.8	1650	16.5	157	80	198	76
8175	1,440,000	480		18900		3	12.9	1800	18.0	171	80	210	76
8200	1,800,000	600		23600		5	16.1	2250	22.5	214	100	227	94
8250	2,250,000	750		29500		5	20.1	2810	28.0	268	100	252	94
8300	2,700,000	900		35400		5	24.1	3380	33.8	320	118	268	104
8350	3,150,000	1050	↓	41300	↓	7½	26.1	3940	39.4	375	118	268	114

† Based on 80% thermal efficiency for oil and gas and 70% for coal. Add 10% to 35% over calculated heat loss for pick-up load and 10% to 15% for duct radiation losses. The higher figure is preferable for best operating economy and life of the equipment.

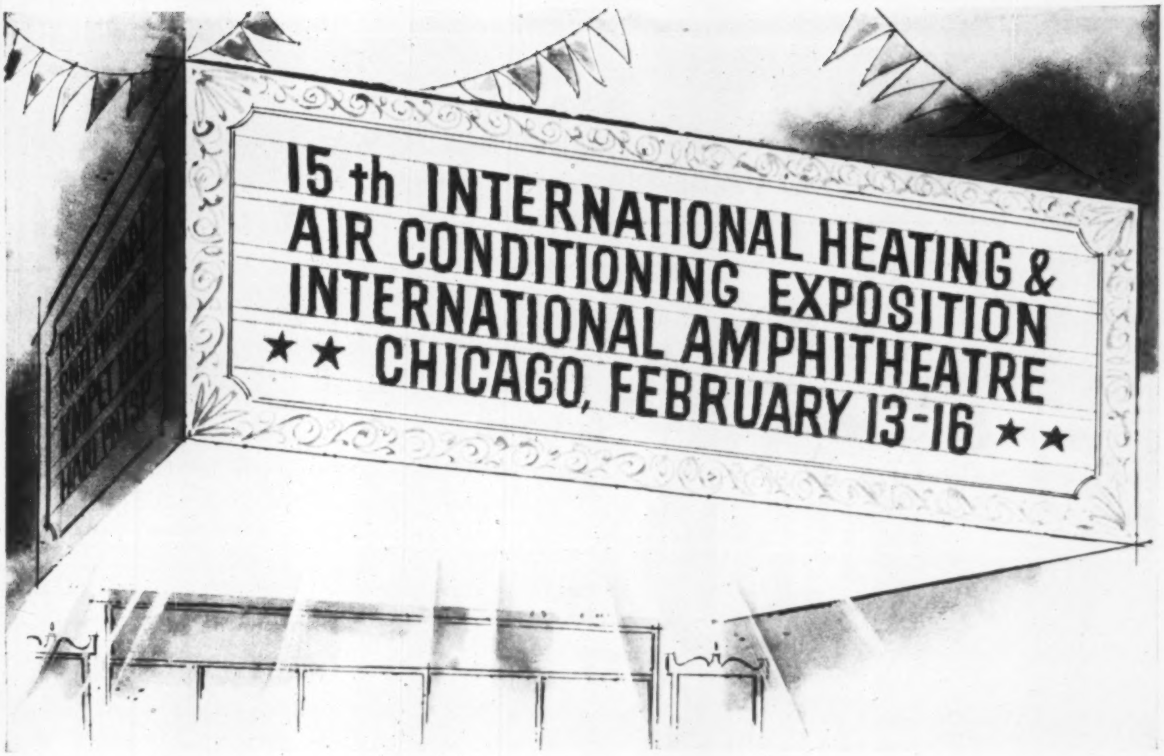
‡ For other air volumes and static pressures consult our Engineering Department.

§ An induced draft blower can be furnished it a stack or chimney is not available. The gas passages of the heaters are adequate so an induced draft blower is not ordinarily needed.

For Complete Specifications, See *Sweet's Catalog Service*

CAMPBELL HEATING COMPANY

Des Moines 17, Iowa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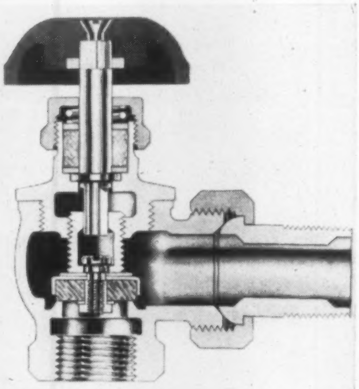
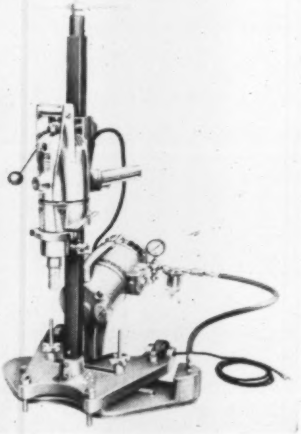


Radiator Valves . . .

...for low-pressure vapor and vacuum steam heating service. Seamless sylphon bellows encloses steam throughout its length. Available in angle, left-corner, right-corner, and straight-way body models. Maximum pressure is 35 psi. — *Modine Mfg. Co., 1500 DeKoven Ave., Racine, Wis.*



Portable Drill Positioner . .

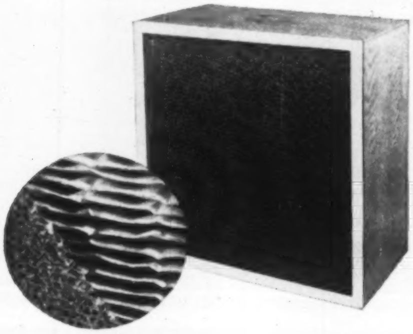
...for use with machines drilling holes up to 14 in. diameter in reinforced concrete, tile, marble, and brick. Permits drill to be set up with base parallel to work or horizontally positioned while drilling on an incline. Consists of a flat aluminum pad resting in a molded rubber gasket which seals it to a floor or wall surface when vacuum is applied by means of an attached electric motor and pump unit. — *Wheel Trueing Tool Co., 3200 W. Davison, Detroit.*

Mine Safety Appliances Company

201 North Braddock Avenue, Pittsburgh 8, Pennsylvania

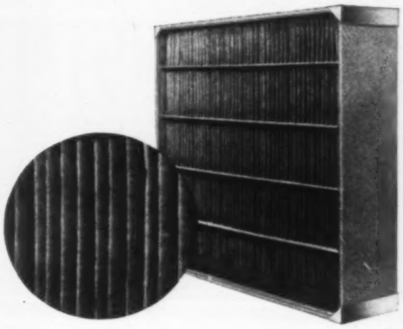
MSA:

Fluid Purification Equipment / Fluid Purification Specialists for 45 years



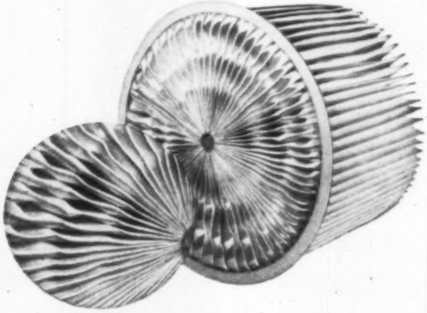
M-S-A® UltraAire* Space Filter

Lightweight, fire-resistant, unusually strong, and ideal for high humidity service. Individually pretested and proved at least 99.97% efficient in removing particles of 0.3 micron diameter.



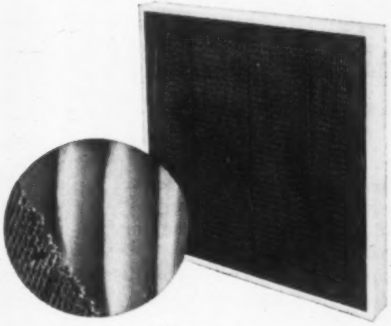
M-S-A® Dustfoe* Space Filter

Offers the efficiency of an Electrostatic Precipitator without the high cost and without the possibility of arcing "blow-off." 85-95% certified efficiency on NBS Atmospheric Air Dust Stain Rating.



M-S-A® Cylindrical-Type UltraAire* Space Filter

Honeycomb-type fold without separators is admirably suited to cylindrical element construction. This shape is preferred for pressure systems and round ducts. Easy to handle. Inexpensive to ship.



M-S-A® Air-O-Kay* PreFilter

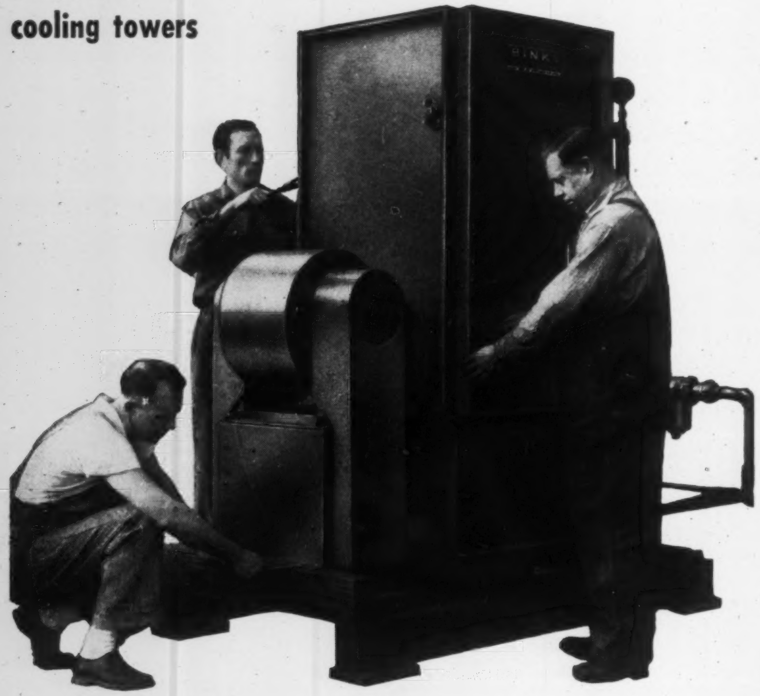
Impingement type panel prefilter which can be used oiled or dry to remove lint and other large airborne particles from the atmosphere. 60-70% certified efficiency on NBS Stain Rating.

*Trademark

Write for illustrated technical bulletins on M-S-A Space Filters related to your particular system problem. Ask an MSA Representative for system recommendations. Mine Safety Appliances Company, Pittsburgh 8, Pa., Phone: CHurchill 1-5900.

Other Fluid Purification Equipment includes catalytic filters for jet aircraft cabin air; air separation plants; inert gas generators; space capsules; bomb shelters; air line filters; jet fuel and hydraulic fluid purification.

Binks 4-B cooling towers



hot-dipped

galvanized after fabrication for years more service

Now . . . Binks adds extra years of life to an already rugged, dependable cooling tower.

New 4-B series

Now . . . blowers, tower casings, basin . . . all parts subjected to corrosive action, weather and temperature changes are hot-dipped galvanized *after they are fabricated.*

No paint . . . no other coating material offers such long-lasting positive protection. And . . . hot-dipping after fabrication insures that there is no break in this protective armor.

High performance

Season in and season out, Binks towers are always more than a match for the specified cooling load. Motors, whisper-quiet squirrel cage blowers, decking and water dispersal ratios are all properly balanced for top efficiency.

Get complete specifications Ask for Binks Bulletin 478. Contains dimensions, capacities and other specification and performance data.

Binks

EVERYTHING FOR WATER COOLING

A COMPLETE LINE OF NATURAL DRAFT AND MECHANICAL DRAFT COOLING TOWERS AND INDUSTRIAL SPRAY NOZZLES

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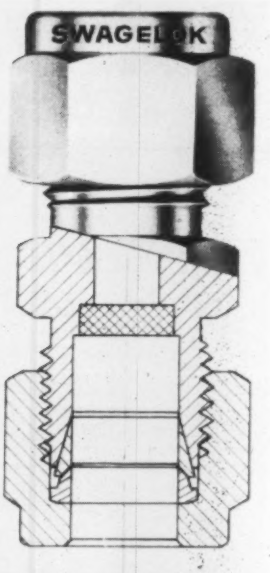
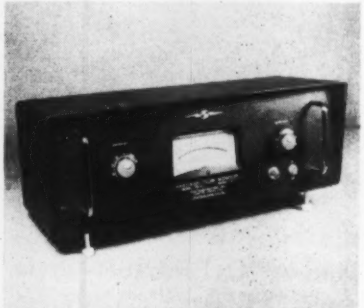


Snubber Tube Fitting . . .

. . . provides a dampening effect to sudden flow surges for protection of gages and other instruments. Can serve as a filtering device for liquids and gases, especially in low flow lines. Available in all standard tube fitting shapes in firm's catalog with type 316 stainless steel or bronze sintered elements. Sizes from $1/8$ to $3/8$ in. OD tubing. — *Crawford Fitting Co., 884 E. 140th St., Cleveland* 10.



Gas-Air Flowmeter . . .

. . . for mass flow measurements of pre-determined air or gas flow rates. Compensates for changes in temperature and rate of change of temperature. Center reading unit with variable sensitivity and range. No pressure drop occurs through flow tube. —*Hastings Raydist, Inc., Hampton, Va.*

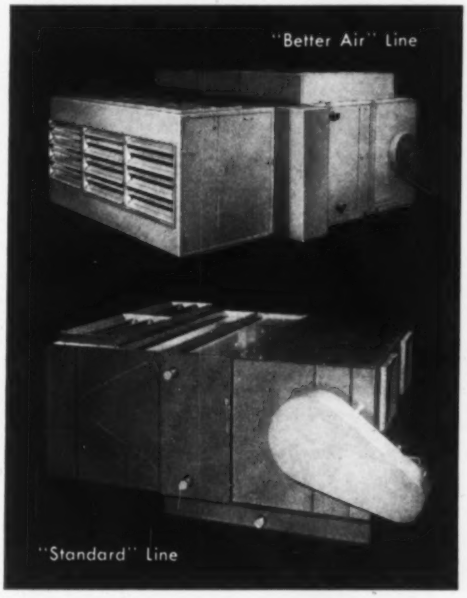
A Leading Consulting Engineer Told Us:

"Kennard/Nelson's two-line idea adds a needed new dimension to air conditioning!"

Kennard/Nelson is a new name* in air conditioning . . . a new name with an entirely new answer to a serious problem facing engineers.

That problem: How to design a system for clients interested in long-lasting, high-quality air handling equipment without turning to expensive custom construction?

Kennard/Nelson has designed two distinctively different lines of packaged central station air conditioning units. The first is the outstanding new "Better Air" line, developed specifically for projects where quality in equipment and materials comes first.



LOWER PRICED LINE

A lower priced "Standard" line, *which includes many Better Air quality features,* was developed for competitive installations that require equipment "equal to or exceeding" the industry standards.

Both Kennard / Nelson lines are offered in a wide range of sizes and arrangements. For example, there are 14 basic sizes and 24 different arrangements (500 cfm to 36,000 cfm) in the *Better Air* line. Every model includes factory-engineered "built-in" air cleaning. This allows engineers to specify the exact type and degree of air cleaning desired.

"BETTER AIR" FEATURES

Only the Kennard/Nelson *Better Air* units are designed with exclusive Penta-Post frame construction and double drain pans . . . features which add years to unit life and cut replacement costs. Heavy gauge steel Penta-Post frames are designed with solid 5-angle, all-welded construction. Drain pans are divided into inner and outer sections separated by a one inch pad of insulation. Pans slope for more efficient drainage, and inner pans are available in long-lasting galvanized steel or copper.

FLUSH-MOUNTED DESIGN

Every component is easily accessible through flush-mounted service panels with quick-opening doors. These and many other outstanding quality features make the Kennard/Nelson *Better Air* line an unchallenged leader in long-range air handling performance and operating economy.

Bring your catalog up to date. Send for your *free* copies of the new Kennard/Nelson "Better Air" Bulletin Number AC-100 and the "Standard" Bulletin Number D-100.

**Herman Nelson and Kennard, both familiar names in the heating, ventilating and air conditioning industry for years, have been joined as a single division of the American Air Filter Company, Inc.*

AAF American Air Filter

BETTER AIR IS OUR BUSINESS

373 Central Ave., Louisville, Kentucky

Visit our Booth No. 40 at the ASHRAE Show. See both the new "Better Air" and "Standard" Kennard/Nelson products.

". . . in six months the new boiler has saved us $1442.96."

Continental

2-PASS

AUTOMATIC BOILERS

UNIQUE DESIGN ADVANTAGES of the Continental 2-Pass Boiler bring you important savings and operational economies that no other boiler can match. Continental saves from the start with lower first cost . . . more efficient combustion and maximum heat transfer reduce fuel costs . . . easier accessibility speeds maintenance . . . balanced internal circulation assures long service life.

EASY FIRESIDE ACCESSIBILITY *with Continental's exclusive hinged front cover and davited rear cover simplifies inspection and cleaning. Front or rear tube removal is possible. Easy access to waterside also is provided.*

Send for details of new boiler Leasing Plan and Bulletin BE-400.

CONTINENTAL BOILER Division
BOILER ENGINEERING & SUPPLY CO., Inc.
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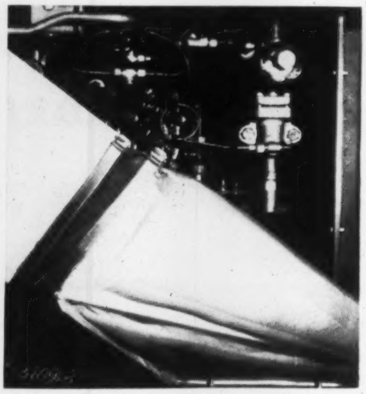
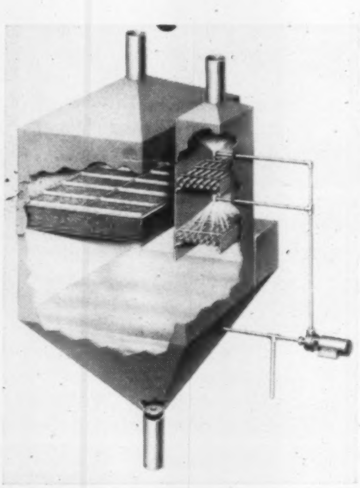
Nationwide Sales and Service in Principal Cities



Gasket, Flexible Coupling

. . . can be made of firm's "Coverlight-N," a neoprene-coated nylon fabric. Used for joining high pressure blowers to ducts, and as an anti-galvanic gasket between steel frames and aluminum housings of portable temperature and humidity equipment. Material is fungus non-nutrient. — *Vulcan Rubber Products Div., Reeves Brothers, Inc.,* 1071 *Ave. of the Americas, New York* 18.



Dust Collectors . . .

. . . utilize a water spray over stainless steel screening to trap impurities. Low pressure drop of air entering system reduces power requirements. Capacities up to 50,000 cfm for self-contained units. — *Antipol Corp.,* 407 *Hill Arcade Bldg., Galesburg, Ill.*

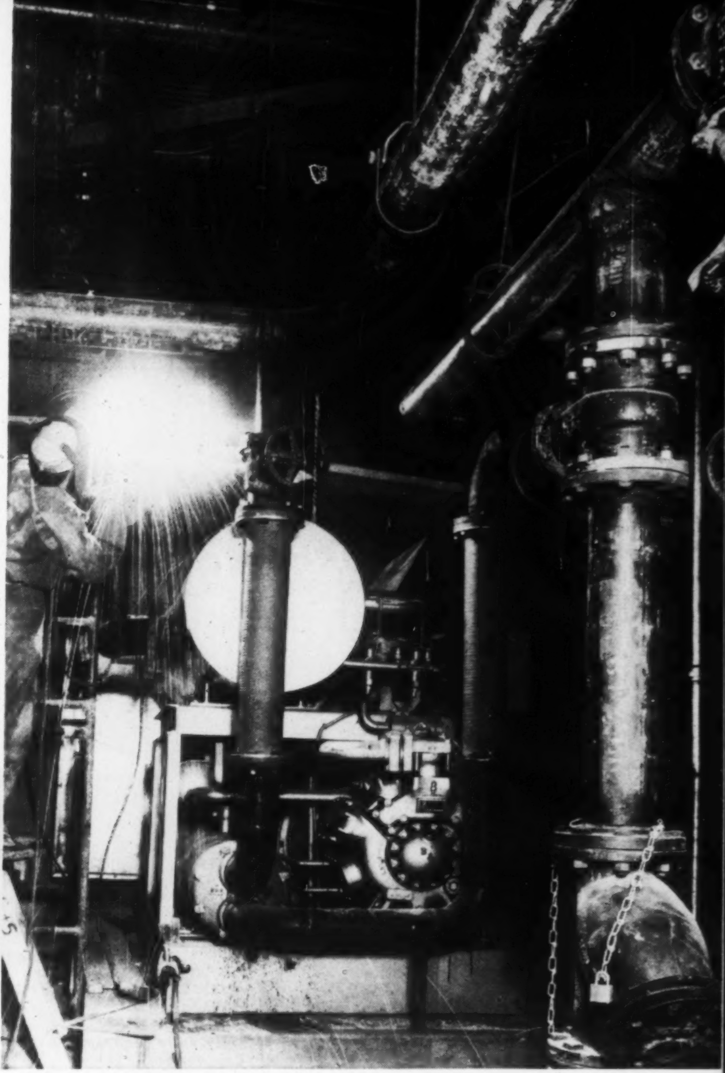
Q. "HOW DID THIS PIPING JOB GO, MR. SCHWARZ?"

A. "It was really a pleasure to work with SPANG pipe!"

SPANG
CW
STEEL PIPE

Spang Steel Pipe is expected to outlast the life of this beautiful new 525 Thayer Avenue Apartment Building, Silver Spring, Maryland.

Architect: Edmund W. Dreyfuss, Washington, D.C.
Mechanical Engineer: Shefferman & Bigelson, Washington, D.C.
General Contractor: Arnold Perry & Associates, Silver Spring, Maryland
Piping Contractor: Jack Schwarz & Son, Washington, D.C.
Spang Distributor: E. G. Schafer & Company, Washington, D.C.



Nearly three miles of Spang Black and Spang Galvanized Pipe in ½" to 5" diameter were installed in two Silver Spring apartments. Contractor reports a smooth, trouble-free installation.

"We never had the first bit of trouble with it." Those are comments by Mr. Irwin Schwarz, secretary-treasurer of Jack Schwarz & Son, Washington, D.C. We interviewed Mr. Schwarz about the two Spang Steel Pipe installations his company was making: the 37-unit 700 Sligo Avenue Apartment and the 74-unit 525 Thayer Avenue Apartment in Silver Spring, Maryland.

Here's what else Mr. Schwarz said: "We installed nearly three miles of Spang Black and Spang Galvanized Steel Pipe. Each length was tested on the job site at 200 psi, and the tests turned out just as we expected—fine!

"Spang Pipe was used on all plumbing, vent lines and combination air conditioning and heating lines. On these combination lines, temperature range goes from 40° to 140° F; this calls for rugged pipe!

"Spang Pipe threads nicely and bends and welds easily. It's our considered opinion that steel pipe is more economical than copper and performs every bit as well. Spang Steel Pipe is a good Grade A uniform product and should last as long as the buildings . . . probably longer."

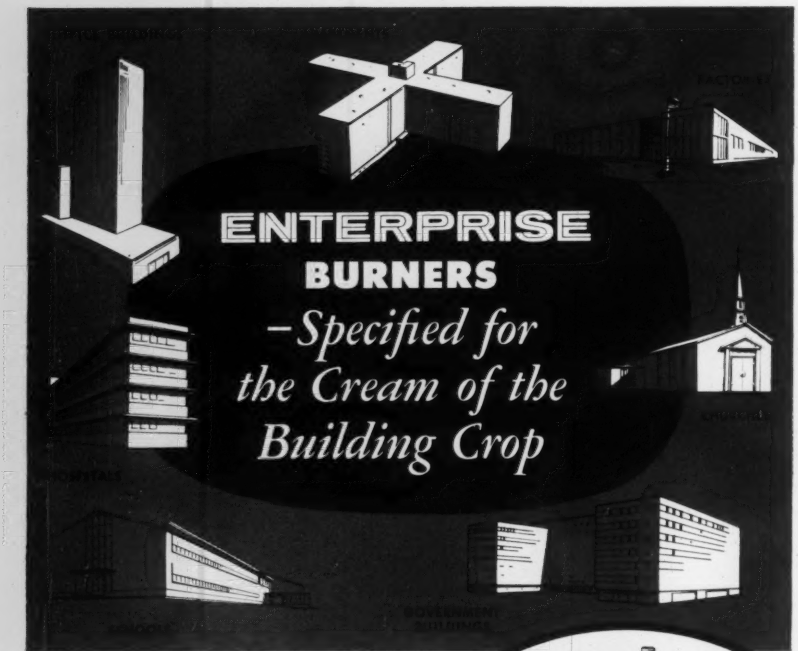
Want fast, trouble-free installations?

Join Mr. Schwarz and thousands of other leading contractors who have found Spang Steel Pipe uniformity offers excellent working advantages and time saving jobs. Call your nearby Spang Distributor for service. Spang Steel Pipe is one of the many fine products produced by *National Supply Division, Armco Steel Corporation, Two Gateway Center, Pittsburgh 22, Pennsylvania.*

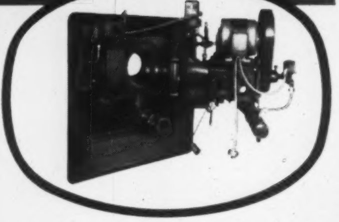
Steel

Steel's Symbol of strength, long life, and economy

ARMCO National Supply Division



ENTERPRISE
BURNERS
—*Specified for the Cream of the Building Crop*



A History of 30 Years' Leadership Backs Your Choice of Enterprise

First in Burner Design

Scores of original burner developments were Enterprise "firsts." V-Belt Drive, used exclusively on all Enterprise Burners since 1938, introduced new flexibility, efficiency and economy to horizontal rotary burner operation. The remarkable Enterprise "Measured-Rate" Metering Pump brought an end to problems of oil flow due to varying oil temperatures and viscosity. These and other contributions to better burner service reflect the efforts of a continuing program of product development at Enterprise.

The Quality-Built Burner Line

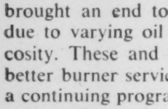
Only the finest of materials are used in manufacturing Enterprise Burners. Every phase of production is precisely controlled by expert craftsmen to maintain highest quality standards. No wonder Enterprise Burners are built better, cost so little to operate and maintain, insure long, efficient, trouble-free service.

Only Fully Qualified Distributors and Dealers Serve You

An unusually high percentage of Enterprise Distributors and Dealers have been selling and installing Enterprise Burners for from 10 to 30 years. Enterprise works closely with these distributors, offering complete engineering service on such things as combustion chamber design, correct piping arrangements and electrical diagrams—to assure you of the most efficient operation of your Enterprise Burner.

These are the plus factors you enjoy when you specify Enterprise—first choice in burners where quality comes first.

Available in sizes from 4 to 200 gallons per hour. Listed by Underwriters' Laboratories, Inc., U. S. A., Underwriters' Laboratories of Canada, and approved by the Canadian Standards Association.



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dependable BURNERS

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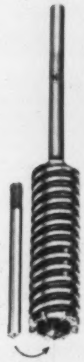


Core Drill Bits . . .

. . . for all kinds of concrete, brick, and stone. Features removable starter point for sizes 7/8 to 2½ in. diameter; sizes ½ to ¾ in. diameter without starter point. Units have continuous threads. Form CDB-960 sent on request. — *Holub Industries, Inc., Sycamore, Ill.*

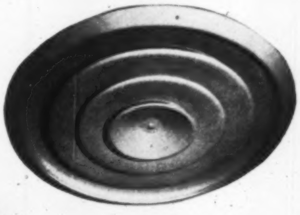
Mercury Relay . . .

. . . plunger type unit for heavy loads such as resistance heating and welding. Contains only one moving part and can make 100 breaks per minute at rated load. Contact hermetically sealed with ratings of: a-c, 120 v, 30 amp; 240 v, 20 amp; and 440 v, 8 amp; d-c, 120 v, 15 amp; 240 v, 10 amp. Bulletin 0-20 sent on request. — *The Mercoid Corp.,* 4201 *Belmont Ave., Chicago* 41.

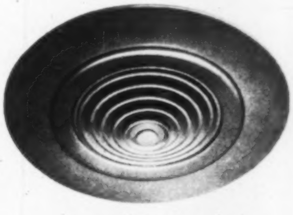
FLEXIFLO

Diffusers - Registers - Grilles

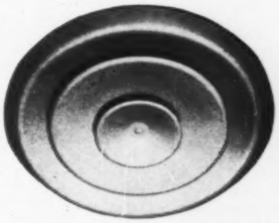
MEET EVERY DEMAND



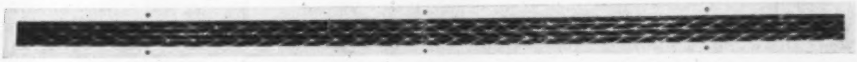
Series "QP" Diffusers
1—Adjustable pattern
2—Fixed blades
3—Supply and return



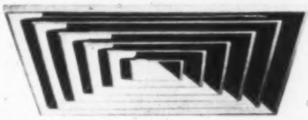
Series "V" Diffusers—
adjustable pattern
Series "R" Diffusers—
adjustable volume



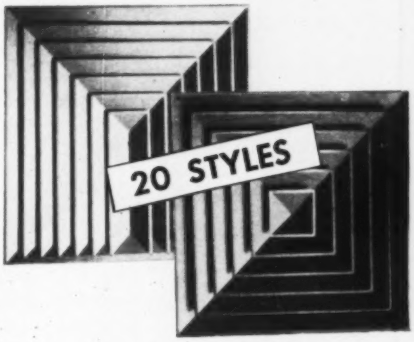
Series "B-C" Diffusers—
fixed cone for
general application



"LINE-AIR" Long Slot Diffusers

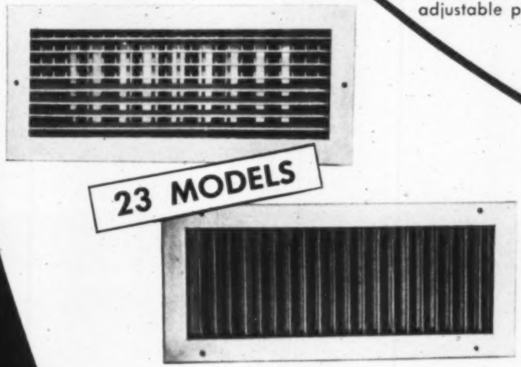


Series "HAR" Diffusers—
adjustable volume control
Series "HAV" Diffusers—
adjustable pattern control



Series "MP" multi-pattern
ceiling diffusers

REGISTERS & GRILLES



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FLEXIFLO
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34

☐ Send Flexiflo Diffuser Manual #34
☐ Send Stream-Flow Register and Grille Manual #39
☐ Have representative call

Name .... Title ....
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UNIVERSAL DIFFUSER CORP.
38 Marbledale Road, Tuckahoe, N. Y.

Sales offices in principal cities of United States and Canada

Costs Less Because
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THIS TRUE BALL JOINT MAKES THE DIFFERENCE

When selecting unions it will pay you to remember 2 things: (1) Darts can be used over and over again — on location after location (2) On location after location, they give a drop-tight seal. How can you beat this combination for economy . . . at any price?

QUICK FACTS

- Extra wide bronze seats resist pitting and corrosion
- Nut and body of air-refined, high test malleable iron are practically unbreakable
- Heavy shoulders can withstand the toughest wrench abuse
- Each Dart is individually vacuum-tested

DART UNIONS Products of DART UNION COMPANY PROVIDENCE 5, R.I.

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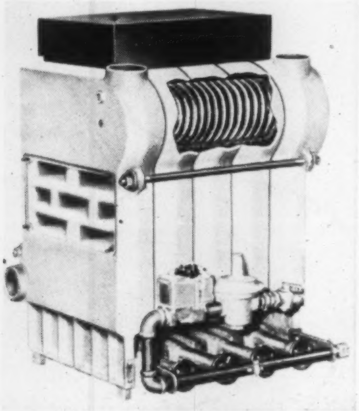
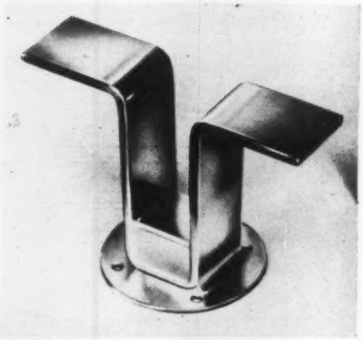


Cast Iron Boilers . . .

. . . ranging from 90,000 to 360,000 Btu per hr input. Series "60" has eight model sizes for water or steam available in standard assembly models with factory packages in three sizes. High offset cast iron water tube construction establishes pre-determined height of boiler for all models regardless of size. — *Peerless Heater Co., Boyertown, Pa.*



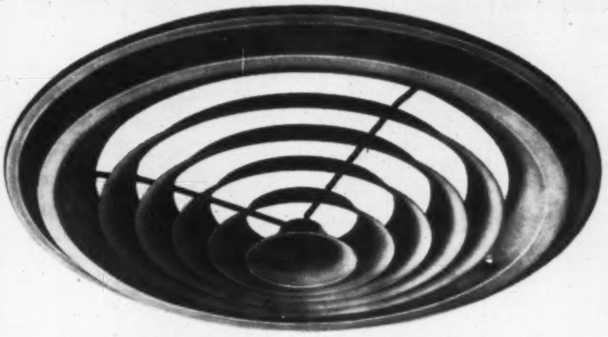
Concrete Inserts . . .

. . . primarily for suspending heavy loads such as piping from concrete walls and ceilings. U-shaped units also used in mounting machinery and equipment to floors. A $\frac{5}{8}$ in. nut floats in a sealed compartment within insert to provide full adjustment during installation. — *Foster Illinois Corp.*, 1238 *Harrison St., Chicago* 7.

Get in Line—The BEST for LESS in CEILING DIFFUSERS

No. 1500 ROUND and No. 2500 SQUARE U.S. CEILING DIFFUSERS ARE SUPERIOR

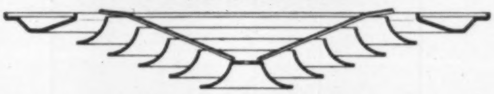
VOLUME PRODUCTION—PERFECT DESIGNING—LOW COMPETITIVE PRICE



U.S. No. 1500 ROUND CEILING DIFFUSER

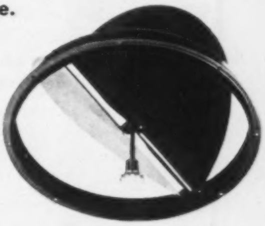
The MOST VERSATILE—LARGEST FREE-AREA. Made to Sell Higher—But Sold at Low Prices. WIDE, DEEP, OUTER ANTI-SMUDGE RING Protects Ceilings. All Rings from Outer Ring to CENTER CONE describe perfect PARALLEL CURVE of AIR FLOW—RESULT: PERFECT AIR DIFFUSION.

FINISH—ART BUFF (prime coat). EQUIPPED with RUBBER SEALING GASKETS—Properly Attached to the Rim of ANTI-SMUDGE RING which Creates a POSITIVE SEAL against Ceiling Streakage.



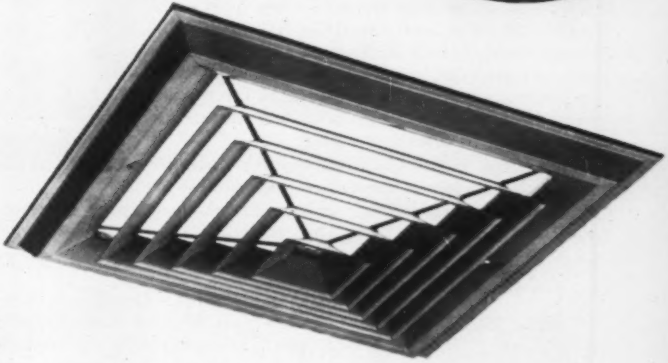
CROSS-SECTION No. 1500
U. S. ROUND STEP-DOWN CEILING DIFFUSER

Now the No. 1800 and No. 1801 ROUND BI-VALVE CEILING DAMPER—REMOVABLE KNOB-OPERATOR. A REAL FEATURE for System Balancing and Volume control at the DIFFUSER.

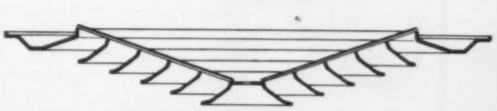


U.S. No. 2500 SQUARE CEILING DIFFUSER

Note: the WIDE, DEEP, OUTER ANTI-SMUDGE SECTION. This Protects the Ceilings against Soilage. The Air Stream is Diverted sufficiently Downward to Clear the Ceiling and yet Create PERFECT DIFFUSION. STANDARD FINISH—ART BUFF (prime coat). All No. 2500 CEILING DIFFUSERS are Equipped with the Finest Rubber Sealing Gaskets Properly attached to the Outer Rim of ANTI-SMUDGE Section which creates a POSITIVE SEAL against CEILING STREAKAGE.



No. 2800 and No. 2801 SQUARE BI-VALVE CEILING DAMPER. REMOVABLE KNOB-OPERATOR. A REAL FEATURE FOR SYSTEM BALANCING and VOLUME CONTROL AT THE DIFFUSER.



CROSS SECTION No. 2500
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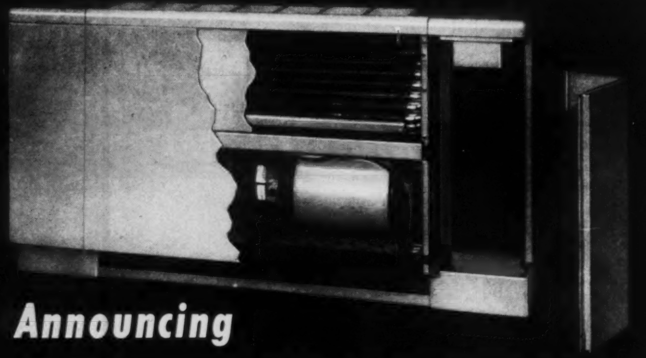


Announcing
FEDDERS NEW TYPE F FEDAIR
Remote Air Conditioners

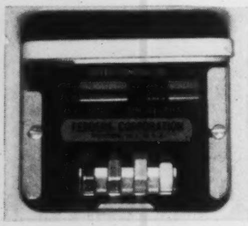
ONLY
8-3/8"
THIN

Whether you are an architect, consulting engineer, contractor or building owner, you will welcome the new and exclusive features of Fedair Type F Remote Air Conditioners (Fan-Coil Units).

Only 8⅜" thin, they occupy minimum space in Free Standing, Recessed, Floor or Overhead installations.

Slanted aluminum-finned copper tube coil provides maximum heat transfer when used with chilled water or hot water. Coil compartment is completely insulated. Factory installed manual air vent is standard equipment. Quiet operation is assured by 1080 RPM fan motor with high capacity blowers. Fan motor is equipped with disconnect plug.

Fedair Type F Air Conditioners are made in a complete range of capacities and models to meet today's installation requirements. All units are Underwriters' Laboratories approved.



PUSH BUTTON CONTROL

Fedair Unit Air Conditioners are equipped with Tap Wound motors and convenient push button switch for individual speed control to suit personal preferences in all multiple installations.

Write for catalog HC-C6

Get the inside story of new Fedair Type F Remote Air Conditioners at the Chicago Show . . . Booth 702.

FEDDERS CORPORATION, HEATING DIVISION
Lalor and Hancock Streets, Trenton 7, New Jersey
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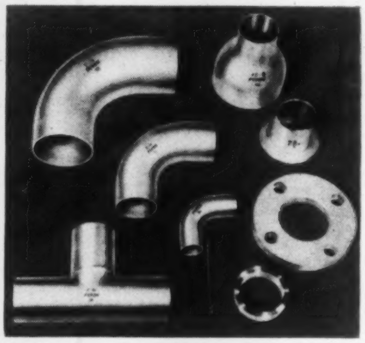


Tangential Fittings . . .

. . . for nominal temperature, low pressure process piping. Line includes elbows, returns, tees, caps, stub ends, and reducers in stainless steel or aluminum, ½ through 4 in. diameter pipe sizes. Schedule 5S and 10S. Bulletin P59 sent on request. — *Flowline Corp., New Castle, Pa.*

Combustion Indicators . . .

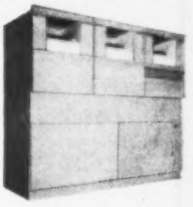
. . . with red and green lights in instrument panel board for immediate indication of combustion conditions. Also serves as a smoke indicator. Applicable to new or existing boilers. Literature sent on request. — *Photomation, Inc., 96 S. Washington Ave., Bergenfield, N. J.*

Spray Nozzle . . .

. . . for cooling and other applications. "MS-1" made of brass and has a flow rate of 1 gpm at 40 psi. Spray angle approximately 110 deg. Unit made to solder into standard ½ in. copper tubing fittings. — *Bete Fog Nozzle, Inc., Greenfield, Mass.*

which man specified Typhoon ?

That complacent looking fellow on top of the pole. He knows Typhoon will deliver beyond specifications—guaranteeing satisfaction. With the addition of 28 new units to its 1961 Line, Typhoon offers the industry's broadest, biggest, most versatile group of packaged air conditioners, furnaces and heat pumps. Typhoon economy begins with its mass produced components, which can be custom-assembled to your order to meet any unusual requirement... **at little or no extra cost.** Typhoon quality begins with Power Reserve—superior components and oversize parts to deliver beyond rated capacities. Each Typhoon unit is built to take extreme weather conditions and sudden severe temperature changes without strain or breakdown. The 28 new units include nine heat pumps, three air handlers, three air cooled remote condensing units, three air cooled condensers, and ten self-contained package units. **For complete satisfaction,** specify Typhoon. It suits every need in air or water cooled units; ceiling, floor or roof mounted units; units that heat and cool or cool only — in capacities from 3 to 75 tons. Write us for complete product literature.



Water Cooled Self-Contained Packaged Units 3 to 75 Tons

TYPHOON

HUPP

TYPHOON AIR CONDITIONING DIVISION, HUPP CORPORATION
505 Carroll Street, Brooklyn 15, New York 8-1-1

☐ Please send me full product literature on Typhoon's 1961 Line.
☐ Please have a representative call for an appointment.

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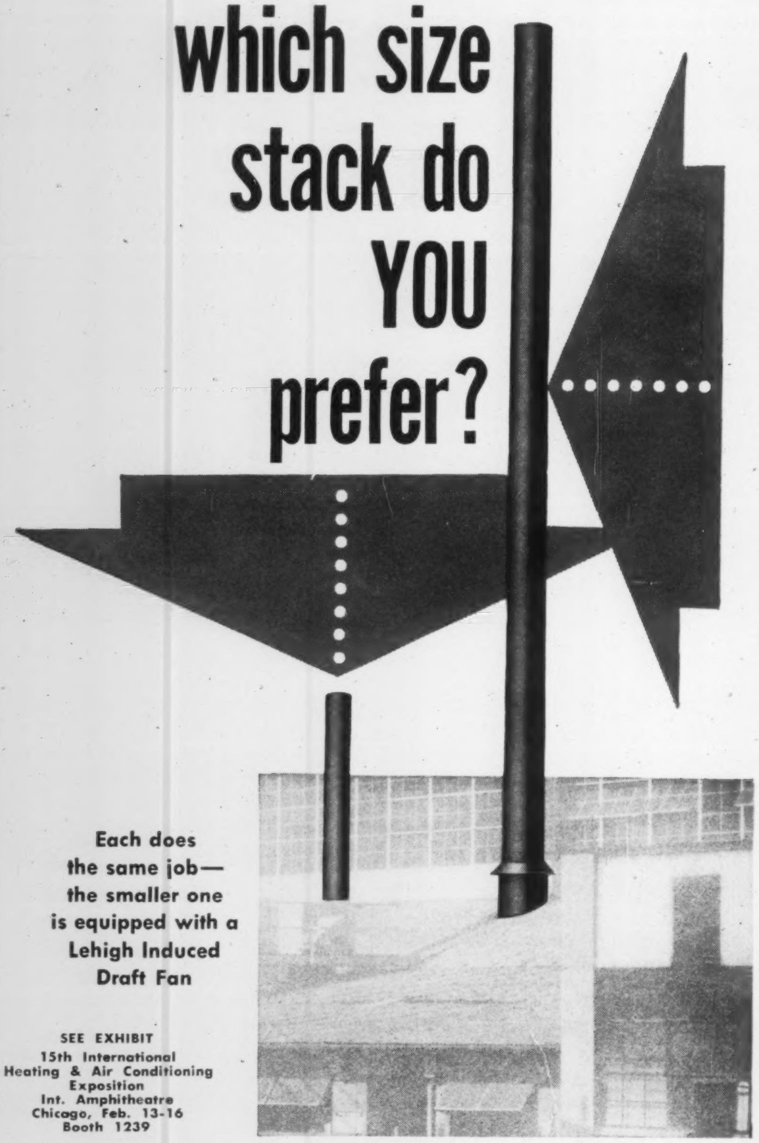

**Each does
the same job—
the smaller one
is equipped with a
Lehigh Induced
Draft Fan**

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15th International
Heating & Air Conditioning
Exposition
Int. Amphitheatre
Chicago, Feb. 13-16
Booth 1239

Lehigh Induced Draft Fans are designed to help eliminate large, costly, unsightly stacks. They maintain a *constant* over-fire draft regardless of atmospheric conditions, help keep boilers operating at *maximum* efficiently at all times, and significantly *lower fuel bills* . . . while radically *reducing* the size of your stack.

Rugged Construction—long life: to prevent distortion under elevated temperature conditions, the fan housing, bearing pedestal, motor support and fan wheel of Lehigh Draft Induced Fans are constructed of all-welded integral $\frac{3}{16}$" mild steel. A radiant heat cover and an aluminum heat flinger protect the inboard bearing from radiated heat. And because both bearing and shaft are kept to a low operating temperature, the Lehigh Induced Draft Fan makes use of standard, self-aligning ball bearing pillow blocks. *All* Lehigh Induced Draft Fans feature a flanged inlet, flanged outlet, and inspection cover as standard equipment.

If you would like to reduce stack height . . . and gain optimum boiler efficiency . . . contact your local Lehigh Representative today. He'll gladly give you all the details. Or write directly to us for our detailed technical bulletin:

2171
LF-1

LEHIGH FAN & BLOWER DIVISION
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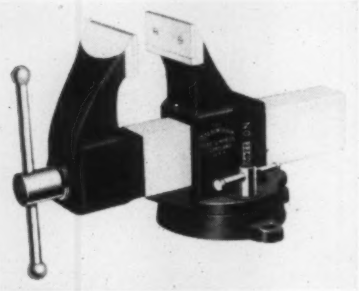
LEHIGH

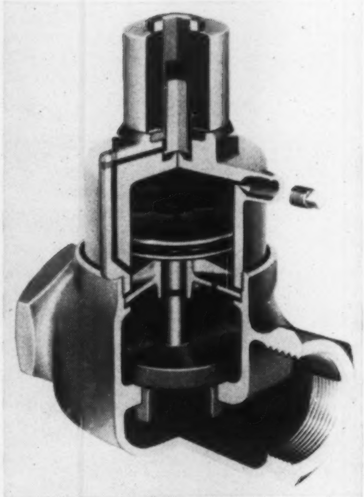
EQUIPMENT DEVELOPMENTS

Continued



Sheet Metal Vise . . .

. . . with replaceable steel jaw faces and malleable iron unbreakable castings. Model "224½" has swivel base permitting it to be swung freely and locked in any position. Jaw width is 4½ in.; jaw opening is 9 in.; throat depth is 5-7/8 in. Catalog 60 sent on request. — *The Columbian Vise & Mfg. Co., Cleveland* 4.



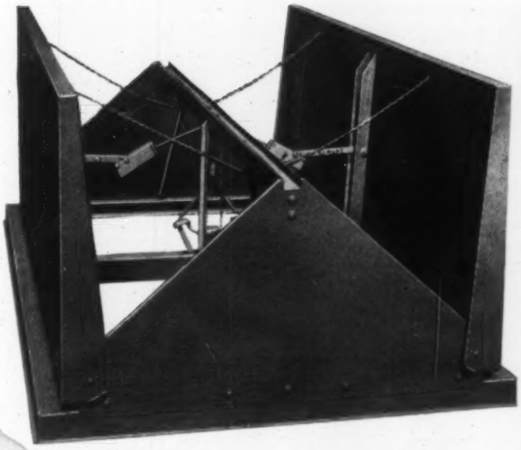
Remote Control Valves . . .

. . . for automatic opening, closing, and operation of pipe lines. Units used in conjunction with cam or timing switch, or sequence timer. Rated for 150 psi water at 150 F. Available for 1 through 6 in. pipe. Model "1825" incorporates a solenoid, while model "25" is hydraulically actuated. Both types close automatically in event of electrical or hydraulic power failure. — *Febco, Inc.*, 1993 *Blake Ave., Los Angeles* 39.

New Swartwout

"Pyrojector"

This emergency relief unit opens automatically in case of fire or explosion, venting flames, smoke and gases through its 28 square foot opening rather than spreading fire beneath the ceiling. Confines sprinkler area. Lets firemen reach the source of the fire.



New Swartwout

"Fiber-Aire"

Indestructible Fiberglass housing is virtually impervious to weather, salt-spray, chemicals and fumes. Attractive molded-in sky-blue color "disappears" against the sky. Sound-absorbing Fiberglass plus new air flow guides makes Fiber-Aire whisper quiet. Complete line of direct drive, belt drive and axial units from 180 to 13,500 C.F.M.

For The Finest in Power and Gravity Ventilation... Specify Swartwout

Lite-'n-Aire Airmover

New Swartwout

"Lite-'n-Aires"

Combine ventilation with skylighting to save money, time and space. Available in two different models: Low silhouette (21" high) Lite-'n-Aire Airmover, and Lite-'n-Aire Heat Valve. Both have translucent molded Fiberglass dampers and gutters that give a flood of soft, natural light with dampers open or closed. Both styles also available with metal dampers and gutters for efficient, economical gravity ventilation.

Lite-'n-Aire
Heat Valve

Send for Complete Swartwout Catalogs

Swartwout

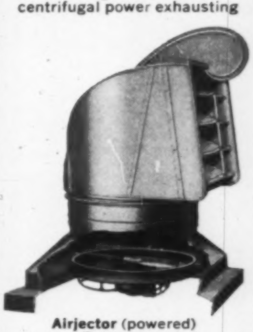
SWARTWOUT
Fabricators, Inc.

Kokomo, Indiana

See the Swartwout Exhibit in booth 1014 at the ASHRAE Show

Powered Low-Line and **Low-Line Relief**

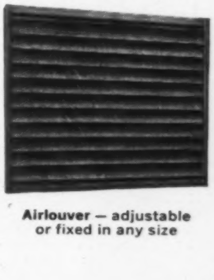
Airlift — high volume centrifugal power exhausting



Airjector (powered) and **Rotary** (gravity)

Powered Valvent and **Gravity Valvent**

Insta-Curb — high quality prefabricated roof curb



Airlouver — adjustable or fixed in any size

LIGHTEST,

most powerful

4" segment bender

on the market

Greenlee No. 777

(1-1/4" thru 4")

weighs only 65 lbs.

(exclusive of shoes)

Save time, cut costs on piping installations with the new Greenlee No. 777 that does more jobs for you than any other bender of its type. Use it to make large sweeps, concentric bends, offsets, 90° bends right on the job. 27-ton ram has power to spare for bending steel or aluminum pipe 1¼" thru 4". A few optional parts adapt it to fast, one-shot 90° bending ½" thru 2". Easy one-man operation with hand or power pump. For more information write for Bulletin E-249.

The Greenlee line of timesaving hydraulic pipe benders also includes No. 880-M2 for ½" thru 2" . . . No. 883 for ½" thru 3" . . . No. 884 for ½" thru 4" . . . and No. 785 BE for 1¼" thru 6". All make 90° bends in one shot.

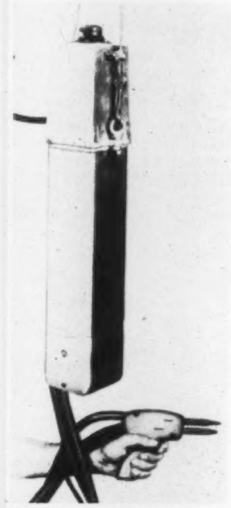
GREENLEE TOOL CO., 1952 Columbia Ave., Rockford, Ill.

TOOLS FOR CRAFTSMEN GREENLEE **JOB-PROFIT TOOLING**

. . . cost control for contractors

EQUIPMENT DEVELOPMENTS

Continued

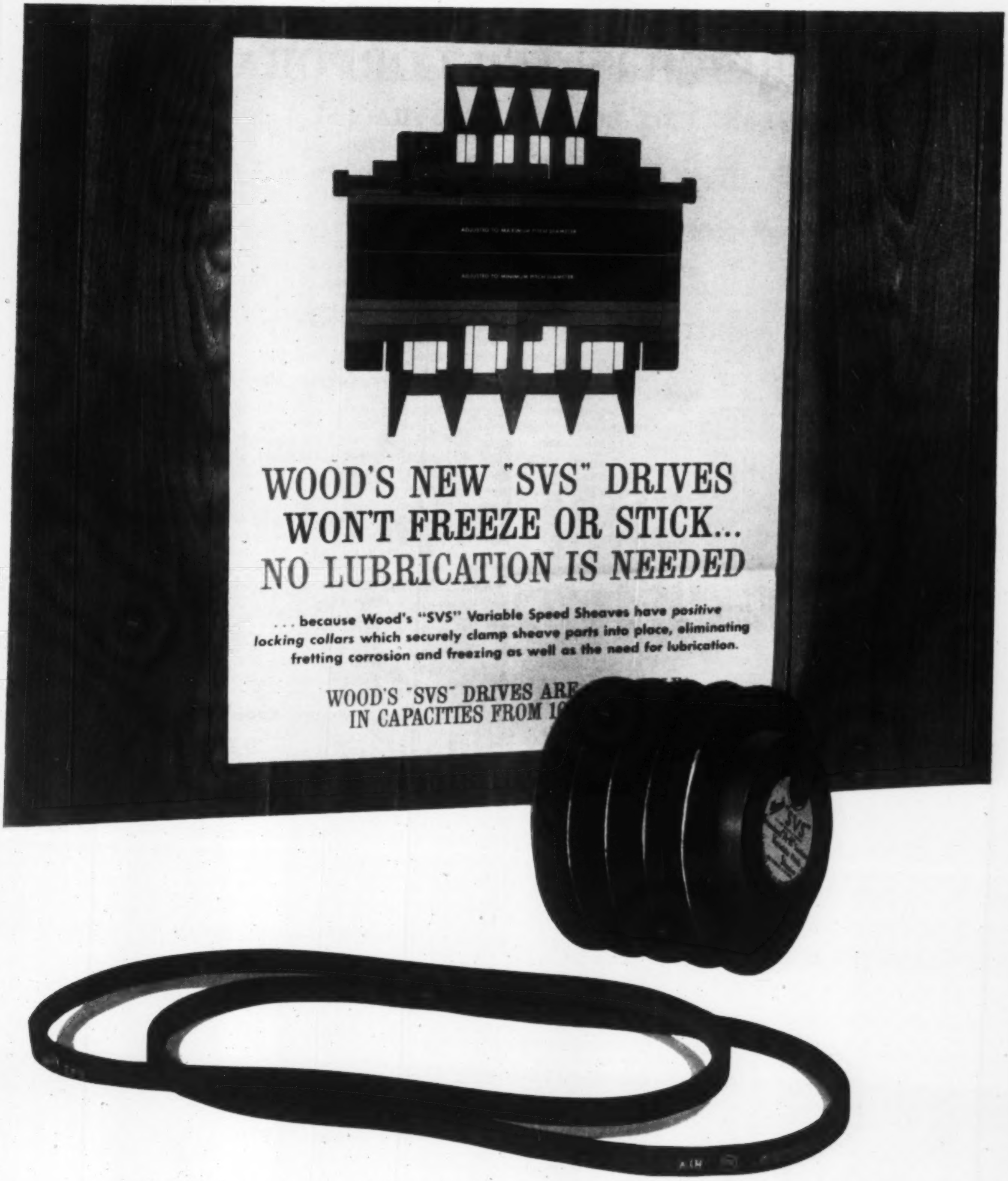


Insulation Fasteners . . .

. . . for spotting insulation pins to ductwork. Two models: "PS-100" weighs 25 lb, operates on 110 v, and is self contained; "PS-200" weighs 30 lb, operates on 220 v, and has a remote gun connected by 5 ft cables. Pins are supplied in standard lengths from ¾ to 2½ in. Bulletin sent on request. — *Duro-Dyne Corp., Route* 110, *Farmingdale, N.Y.*

Ventilator Bases . . .

. . . for use with low silhouette hooded exhaust ventilators. Galvanized or aluminum units from 15 to 48 in. square and lined with glass fiber insulation. Can be used on flat, slanted, or peak surfaces. Bulletin A-60 sent on request. — *Western Engineering & Mfg. Co., P.O. Box* 66455, *Los Angeles* 66.


ADJUSTED TO MAXIMUM PITCH DIAMETER
ADJUSTED TO MINIMUM PITCH DIAMETER
SVS

WOOD'S NEW "SVS" DRIVES
WON'T FREEZE OR STICK...
NO LUBRICATION IS *NEEDED*

. . . because Wood's "SVS" Variable Speed Sheaves have *positive locking collars* which securely clamp sheave parts into place, eliminating fretting corrosion and freezing as well as the need for lubrication.

WOOD'S "SVS" DRIVES ARE
IN CAPACITIES FROM 1

Wood's stationary control, variable speed drives, including SVS types, are available in capacities from fractional to over 300 hp using conventional v-belts. Wide range VPS types are available in capacities from 1 to 20 hp.

Write for BULLETIN 6102.

T. B. WOOD'S SONS COMPANY · CHAMBERSBURG, PENNSYLVANIA
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CAMBRIDGE FILTER CORPORATION

732 EAST ERIE BOULEVARD, SYRACUSE 1, N. Y.

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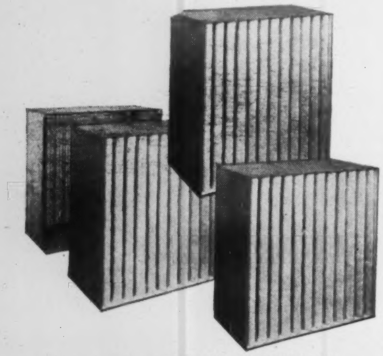
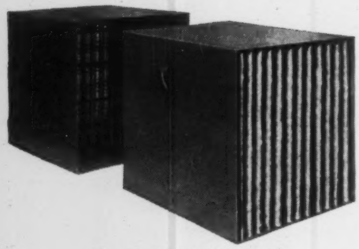
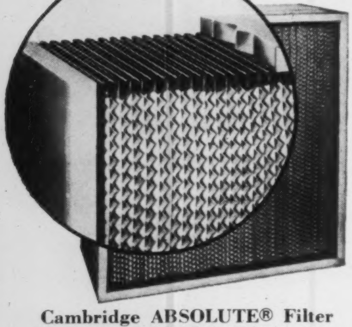
Representatives in Principal Cities



Cambridge AEROSOLVE® Filter Efficiencies 35%, 85% and 95% Discoloration Test, Atmos. Dust (12″ Deep Filter Illustrated)



Cambridge 24″ Deep AEROSOLVE® Filter



Cambridge ABSOLUTE® Filter Guaranteed 99.97% Efficient on 0.3 Micron Particles

High-Efficiency Air Filters

Cambridge air filters are positive, strainer-type, high-efficiency filters which provide trouble-free air cleaning without electric, water or drain connections. They are economically installed and, except for infrequent replacement, require no maintenance. In relation to efficiency, initial pressure drops are exceptionally low.

Cambridge AEROSOLVE® Filters

Consist of permanent cadmium-plated steel frames with easily replaceable and interchangeable cartridges available in efficiencies of 35 percent, 85 percent and 95 percent efficiency (discoloration test with atmospheric dust). This test was developed by the National Bureau of Standards and is used for rating electric precipitators. Most commercial filters test 5 percent to 15 percent by this method. Changes in efficiency requirement are easily met without major change in the system simply by substituting cartridges. Cartridges slide easily into frames and are secured by quick-acting fasteners. Integral prefilters are available where desired.

12″ deep units are designed for face velocity of 250 fpm and can be used at higher velocities by V-ing the filter bank. 24″ deep units, face velocity 450 fpm, can be installed in the plenum in a straight bank, for even greater economies.

	24″ Deep	12″ Deep	
Face Area	24″×24″	24″×24″	24″×12½″
Rated Face Velocity	450 fpm	250 fpm	250 fpm
Rated Capacity	1800 cfm	1000 cfm	500 cfm
Area, Filter Medium	86 sq ft.	43 sq ft.	22 sq ft.

Low Pressure Drop

	AEROSOLVE 95	AEROSOLVE 85	AEROSOLVE 35
Average Discoloration Efficiency	95 percent	85 percent	35 percent
Initial Δp 12″ Deep	0.35″ w.g.	0.22″ w.g.	0.16″ w.g.
Initial Δp 24″ Deep	0.45″ w.g.	0.32″ w.g.	0.25″ w.g.
Final Δp 12″ Deep	0.80″ w.g.	0.60″ w.g.	0.60″ w.g.
Final Δp 24″ Deep	0.90″ w.g.	0.70″ w.g.	0.70″ w.g.

The great area and thickness of AEROSOLVE filter cartridges provide long life which, with low initial cost, guarantees economical owning and operating costs.

Cambridge ABSOLUTE® Filters

New glass-asbestos filter medium now used in ABSOLUTE Filters is an improvement both in efficiency and in air-handling capacity over the medium which Cambridge originated for removal of radioactive particles from exhaust systems in *AEC* installations. 99.97 percent removal of 0.3 micron particles is guaranteed. Essentially removes all smoke, dust, bacteria and mold spores and is widely used by industry in applications where the highest degree of air cleaning is required. Every filter individually tested. Maximum penetration of 0.03 percent guaranteed. Initial pressure drop 1.0 in. w.g. at rated air flow. Each filter self-supporting—no permanent frame required. Easily installed. Standard size units from 30 cfm to 1375 cfm in stock for immediate shipment. Special sizes and shapes available on order.

MICRETAIN® Series ABSOLUTE Filters

Similar in construction to ABSOLUTE Filters, but with initial pressure drop 0.4″ w.g. and efficiency of 99 percent NBS dust spot and 95 percent DOP. Available in special sizes and shapes, including cylindrical.

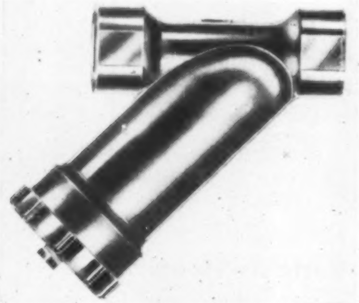
Size, in.	Standard ABSOLUTE		MICRETAIN Series	
	Model	Rated Cap. cfm @ 1″ w.g.	Model	Rated Cap. cfm @ 0.4″ w.g.
8×8×3-1/16	1A*-25	30	7A*-25	25
8×8×5⅞	1A-50	50	7A-50	50
24×24×5⅞	1A-600	650	7A-600	600
24×24×11½	1A-1000	1100	7A-1000	1000
24×30×11½	1A-1250	1375	7A-1250	1250

* A Series, max. temp. 220° F., max. R.H. 85%. Other series available for extremes of temperature, humidity, fire resistance and corrosion.

TEMPERATURE RESET
SEQUENCE SWITCH
WEATHER
CONTROLS

Control Unit . . .

. . . to energize from two to four electrical circuits at pre-selected temperatures or pressures. Miniature units can be used to load and unload compressors which serve chillers or unit conditioners; and sequence cooling and heating action of heat pumps and auxiliary resistance heaters, effecting multiple "thermostat action." Other applications possible. *Automatic Devices, Div. of American Machine and Metals, Inc., Sellersville, Pa.*



Pipe Strainer . . .

. . . a 3/4 and 1 in. FPT nylon unit offered in 20, 40, and 80 mesh screens. More than 22 sq in. of screen area. High capacity unit corrosion resistance. Catalog 2-5-1 sent on request. — *Delavan Mfg. Co., West Des Moines, Ia.*

Satisfy more "tough clients" with Reznor

NEW
AUTOMATIC
VENTER
lets you install
Reznor unit heaters
almost anywhere!

Now, with the Reznor Venter, you can install direct-fired Reznor heaters where you couldn't before—in multi-story buildings or structures with hard-to-get-at chimneys! You'll save money for your "tough clients."

The Venter, available exclusively with Reznor Heaters, is a motorized automatic vent exhauster that mounts directly on the heater. A 4-inch diameter vent pipe is all that is needed to carry burned gases to a sidewall—or down through the floor and out, if you choose. No more costly roof venting or big, expensive flues. Heaters operate more efficiently, too, especially if the room has an exhaust fan which creates a negative pressure.

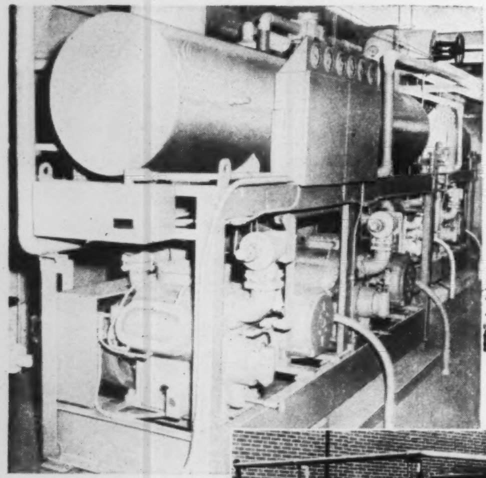
There's a Venter for all Reznor Heaters up to 300,000 Btuh. Ask your representative for Catalog SA-5900, with data on all Reznor Heaters and the new Venter. Or write Dept. 51-Q, Reznor Manufacturing Co., Mercer, Pa.

USE THE REZNOR VENTER AND AVOID THESE PROBLEMS:

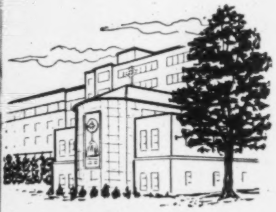
Big, expensive flues | Costly roof venting | Inaccessible venting | Negative pressures

REZNOR HEATERS
"WORLD'S LARGEST SELLING DIRECT-FIRED HEATERS"

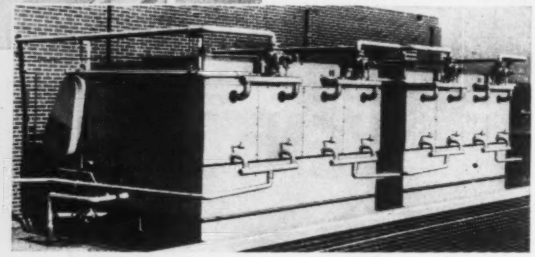
With Vilter air conditioning... it's almost a pleasure to be a patient here



View of the two Vilter packaged water chilling units arranged as four independent refrigeration systems. Two Vilter VMC compressors are included in each chiller unit.



New addition to St. Mary's Hospital, Huntington, West Virginia.



View of the two Vilter evaporative condensers, one for each packaged unit. Each condenser is divided into two separate sections to efficiently reduce capacity when required.

Efficient, flexible, quiet—the Vilter installation for the new addition at St. Mary's Hospital provides everything a hospital requires of an air conditioning system.

This system is designed around two separate Vilter Refrigerant 22 packaged water chilling units arranged as four independent systems supplying a total of 300 tons of refrigeration.

The performance advantages are — (a) an exceptionally flexible operating plant because of the four systems and the 33% and 66% capacity modulation built into each compressor; (b) lower starting and operating noise levels as a result of dividing the full load and using modern slow speed equipment; (c) maximum insurance against failure; (d) ease of servicing.

Four Vilter VMC compressors, V-belt driven from 75 H.P. motors, individually develop 76 tons as each water chiller cools 440 gpm from 53° F. to 45° F. with a 35° F. refrigerant temperature. Two Vilter evaporative condensers are utilized with each condenser divided by a baffle to actually provide four separate 100-ton units.

You benefit doubly with Vilter refrigeration and air conditioning equipment—(1) careful design for long life and reliable, efficient performance; (2) a complete and integrated line of equipment, and the experience to counsel you on the best type of installation. Why not let the nearest Vilter representative help you?

Sold by Vilter Distributor, Commercial Refrigeration Sales, Inc., Huntington, West Virginia.
Architect, Vecellio & Kreps; Consulting Engineer, L. O. Johnson; Mechanical Contractor, Dougherty Company, Inc.

Vilter®
refrigeration
air conditioning

The Vilter Manufacturing Company
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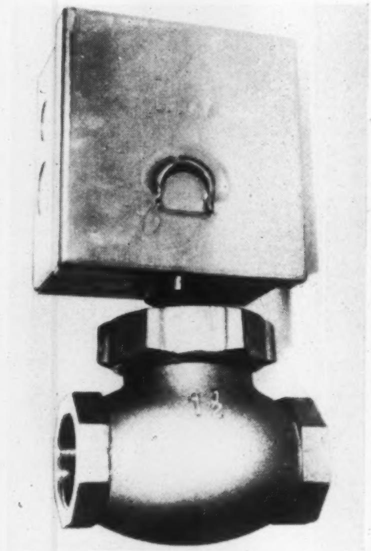
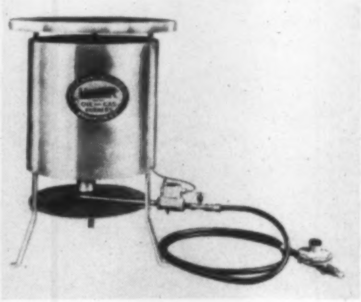
Air Units • Ammonia and Freon Compressors • Booster Compressors Baudelot Coolers • Water and Brine Coolers • Blast Freezers Evaporative and Shell and Tube Condensers • Pipe Coils Valves and Fittings • Pakice and Polarflake Ice machines.

Write for Bulletins 820, 631 and 932 to The Vilter Manufacturing Company, Dept. F-601 2217 South First Street Milwaukee 7, Wisconsin



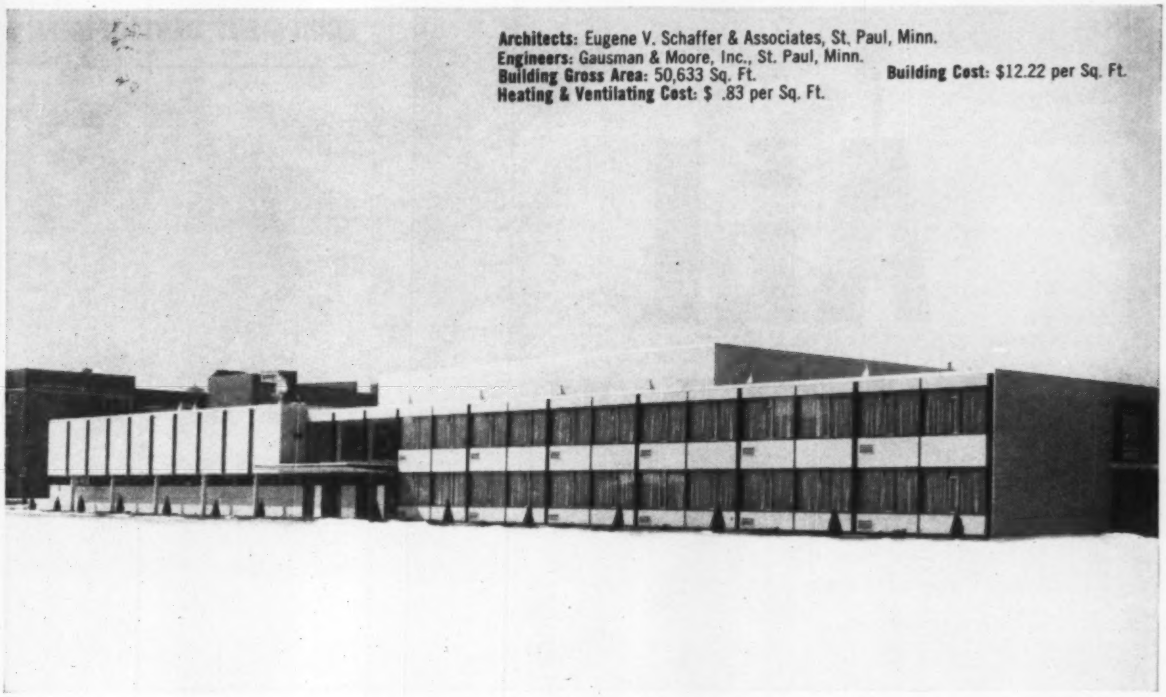
Solenoid Valves . . .

. . . for vacuum exhaust line, drain lines, tank level and supply controls, and other applications. General service units in eight sizes from 3/8 to 2½ in. Units are bronze, two-way packed type, and are spring loaded for closing. Maximum pressures vary from 40 psi in 3/8 and ½ in. sizes, to 4 psi for 2 in. valves. — *J. D. Gould Co.*, 4707 *Massachusetts Ave., Indianapolis* 18, *Ind.*



Portable Heater . . .

. . . gas burning unit for producing temporary heat. Burns LP gas, butane, or propane, producing up to 50,000 Btu per hr (85,000 to 100,000 upon special request). Gas supply shut-off is automatic in event of flame failure. All-steel unit weighs 22 lb. — *Hauck Mfg. Co.*, 126-136 10*th St., Brooklyn* 15.



Architects: Eugene V. Schaffer & Associates, St. Paul, Minn.
Engineers: Gausman & Moore, Inc., St. Paul, Minn.
Building Gross Area: 50,633 Sq. Ft.
Building Cost: $12.22 per Sq. Ft.
Heating & Ventilating Cost: $ .83 per Sq. Ft.

room-by-room and school-by-school...

NORMAN SCHOOLROOM HEATING AND VENTILATING SYSTEMS

cut construction costs...and reduce operating expenses

83c PER SQ. FT. installed, provides thrifty, efficient gas heat plus automatic forced air ventilation in the De LaSalle High School Addition, Minneapolis, Minnesota.

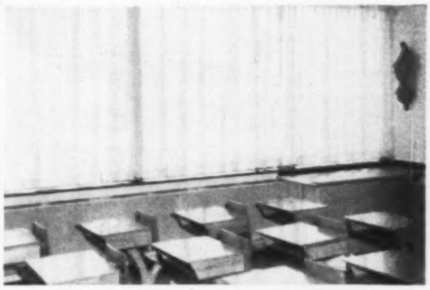
By specifying a Norman Schoolroom Heating and Ventilating System for each individual classroom, the planners of the all-modern De LaSalle High School Addition, Minneapolis, Minnesota, were able to reduce heating and ventilating costs to a mere 83¢ per square foot.

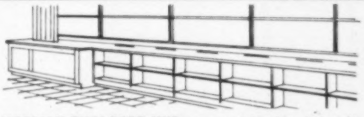
No separate building was necessary to house a central heating plant . . . no tunnels or trenches for ducts or pipes . . . no unsightly chimney . . . no oversizing of boilers or pipes for future expansion. As the school grows additional Norman Systems can be added.

In one low cost package, the Norman Gas-Fired, Forced Air Perimeter Schoolroom System provides complete classroom comfort for each individual room. Fresh outdoor air is automatically blended with recirculated room air to heat and ventilate, with scientific air distribution through perimeter diffusers in Util-i-Duct bookshelf sections. Additional Norman gas-fired units can be installed in non-classroom areas.

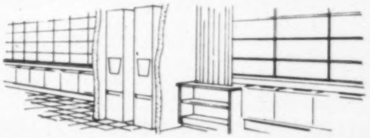
Automatic temperature setback with recirculation of room air during unoccupied periods (80% of the school year) keeps fuel bills at a minimum. Servicing is simplified and any maintenance can be quickly and economically performed.

Write today for comprehensive Manual on HVS Horizontal or Inn-A-Wal Counter Flow models.





NORMAN ENCLOSED HVS compact horizontal unit illustrated with Util-i-Duct bookshelf sections



NORMAN INN-A-WAL counter flow furnace in separate heater room, illustrated with economical Wall-i-Duct sections

Norman® PRODUCTS CO. · 1156 Chesapeake Ave., Columbus 12, Ohio

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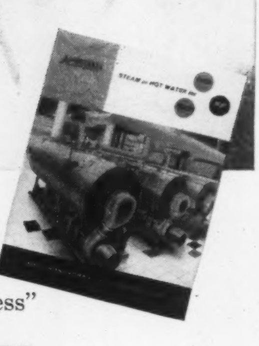
THE STEAM
YOU NEED
WHEN
YOU NEED IT!

That's the money saving story of
DEPENDABLE
AMESTEAM
GENERATORS



Write today for this helpful bulletin
"Steam or Hot Water for Power, Heat, Process"

AMES IRON WORKS, INC.
BOX D-11 OSWEGO, NEW YORK

Control Valve . . .

. . . for automatically governing flow of fuel oil to variable-fire nozzles. Spool type units in three sizes from 5 to 60 gph nozzle ratings. Delivers straight-line variation of nozzle output, providing efficient firing of burner down to 25 or 20 percent of nozzle rating. — *Hill Machine Co.,* 1301 *Eddy Ave., Rockford, Ill.*

Flexible Heating Tape . . .

. . . heating element consists of a woven fibrous glass tape containing electrical conductors in the selvage edges into which a conductive silicone rubber has been vulcanized under pressure. Bulletin sent on request. — *Sunelec, Inc., P.O. Box* 1139, 209 *Homan Ave., Trenton* 8, *N.J.*

D-C Welders . . .

. . . designed to withstand rough usage in the field. Two models: "SDD-250" with ranges of 150 to 350 amp, and 50 to 200 amp, has rated output of 250 amp at 40 v, and provides 115 v d-c auxiliary power. "SDD-250-L" identical except it also has 12 kw of 115/230 v 60 cycle a-c auxiliary power. — *National Cylinder Gas Div., Chemetron Corp.,* 840 *N. Michigan Ave., Chicago* 11.

MIXED AXIAL CENTRIFUGAL FAN

ASHRAE Booth N-247

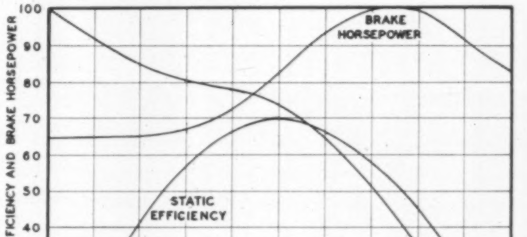
The first and only mixed flow fan offered by the industry especially developed for ventilating, air conditioning, commercial and industrial applications.

The MAC Fan combines the space saving advantages of the axial type fan and the desirable performance characteristics of the centrifugal fan. These features engineered into a single compact unit, offer for the first time the most unique fan in the industry to date.

An integral unit, suitable for universal mounting and requiring fewer transformation or elbow pieces, installation is simple and low in labor cost.

Thoroughly tested in accordance with test procedures as outlined and prescribed by the AMCA Standard Test Code, the MAC Fan is furnished and cataloged in 20 sizes with performance tables to meet most air-handling requirements.

- **Continually Rising Pressure Curve**
- **Non-Overloading HP Curve**
- **Spin-Free Air Delivery**
- **Integral Unit**
- **Easy Installation**



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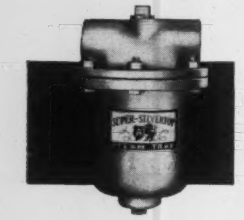
WE RECOMMEND

Super-Silvertop
INVERTED BUCKET TRAPS for:



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Fan Systems
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Header Drips
Hot Water Heaters
Kettles
Pipe Coils
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Steam Tables
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Sterilizers
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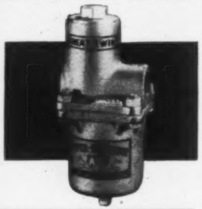
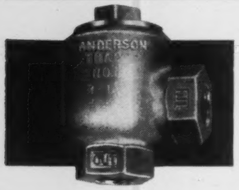
COMBINATION TRAPS for:

Autoclaves
Cooking Kettles
Dryers
Expellers
Kettles
Rendering Cookers
Retorts
Slashers
Submerged Surfaces
Tempering Apparatus
Unit Heaters
Water Heaters

or wherever fast heating up is desired





Quik-Flex
THERMOSTATIC STEAM TRAPS for:

Autoclaves
Cooking Kettles
Dryers
Expellers
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Slashers
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or wherever fast heating up, or outside freeze-proof installations are required.

Anderson
FLOAT TRAPS for:

Air Purifiers
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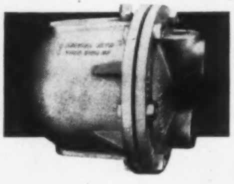
Condensate Flow Meters
False Water Line Sewers
Master Trapping Separators
Air Separators
Gas Separators
Air Receivers
Gas Receivers
Gas Scrubbers

or wherever continuous discharge is necessary



Anderson has no "axe" to grind. With a complete line of traps we provide an honest recommendation for all your trap problems. Write for your free book "How to Select Steam Traps" . . . written to give you an unbiased opinion in answer to all your steam trap difficulties.

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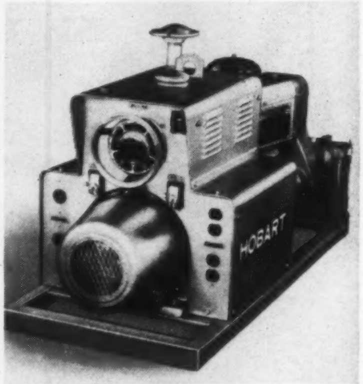
FLUID SPECIALTIES

SUPER SILVERTOPS STEAM TRAPS
BY THE MANUFACTURERS OF Hi-eF PURIFIERS

THE V. D. ANDERSON COMPANY
Division of International Basic Economy Corporation
1949 West 96th Street • Cleveland 2, Ohio

EQUIPMENT DEVELOPMENTS
Continued



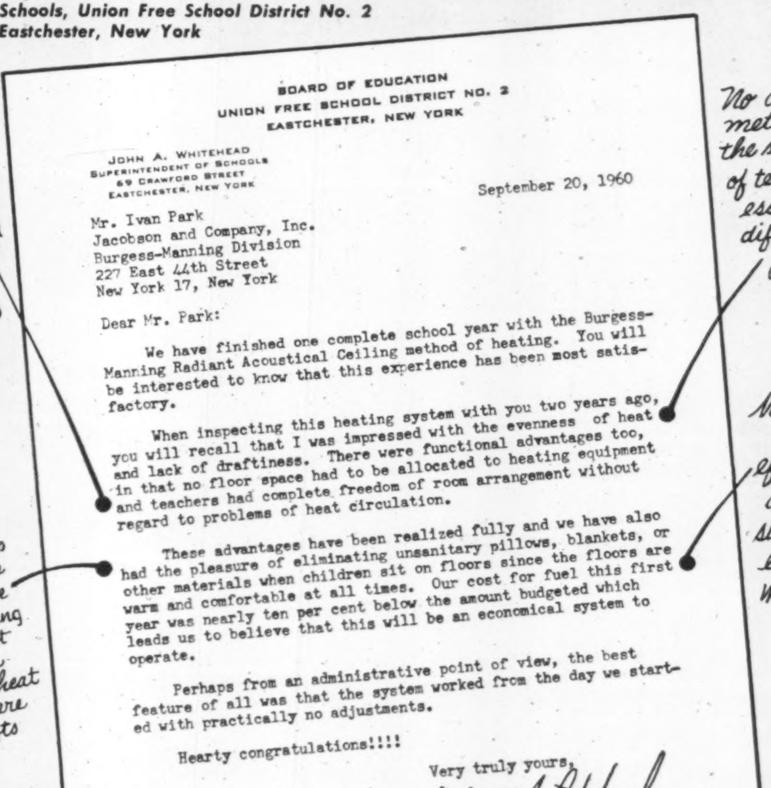
Welder-Power Plant . . .
. . . combination d-c welder and a-c power plant provides 200 amp d-c, at 25 v, on 100 percent duty cycle for straight or reverse polarity welding. Welding range 30 to 325 amp for intermittent use. Power output 2 kw at 110 v a-c of auxiliary power when welding or 5 kw of 110/220 v a-c current when used as generating plant. — *Hobart Brothers Co., Troy, O.*

Ventilation Tubing . . .
. . . for air ducting in mines and underground roadways. Flexible tubing is of polyvinyl chloride which is air and water proof and will not rot or corrode. Tube diameters from 10 to 30 in. in three weights of material, 12, 16, and 20 oz. Available in 75 ft lengths. — *B.E.P. Industrial Equipment, 6346 W. McNichol, Detroit 21.*

Insulating Tape . . .
. . . for weatherstripping, dust and moisture proofing, sound proofing, and as a protection against shock, heat, and cold. Polyurethane foam tape available in three thicknesses of urethane foam backing, 1/8, 1/4, and 1/2 in. Has an adhesion to steel of 75 oz per in. width and a compression strength of 1 1/2 psi. Continuous high temperature limit is 260 F; intermittent limit is 300 F. — *Arno Adhesive Tapes, Inc., Michigan City, Ind.*

"Our cost for fuel this first year was nearly ten per cent below the amount budgeted. . ."

. . . says John A. Whitehead
Superintendent of Schools, Union Free School District No. 2
Eastchester, New York



BOARD OF EDUCATION
UNION FREE SCHOOL DISTRICT NO. 2
EASTCHESTER, NEW YORK

JOHN A. WHITEHEAD
SUPERINTENDENT OF SCHOOLS
69 CRAWFORD STREET
EASTCHESTER, NEW YORK

September 20, 1960

Mr. Ivan Park
Jacobson and Company, Inc.
Burgess-Manning Division
227 East 44th Street
New York 17, New York

Dear Mr. Park:

We have finished one complete school year with the Burgess-Manning Radiant Acoustical Ceiling method of heating. You will be interested to know that this experience has been most satisfactory.

When inspecting this heating system with you two years ago, you will recall that I was impressed with the evenness of heat and lack of draftiness. There were functional advantages too, in that no floor space had to be allocated to heating equipment and teachers had complete freedom of room arrangement without regard to problems of heat circulation.

These advantages have been realized fully and we have also had the pleasure of eliminating unsanitary pillows, blankets, or other materials when children sit on floors since the floors are warm and comfortable at all times. Our cost for fuel this first year was nearly ten per cent below the amount budgeted which leads us to believe that this will be an economical system to operate.

Perhaps from an administrative point of view, the best feature of all was that the system worked from the day we started with practically no adjustments.

Hearty congratulations!!!!

Very truly yours,

John A Whitehead

John A. Whitehead
Superintendent of Schools

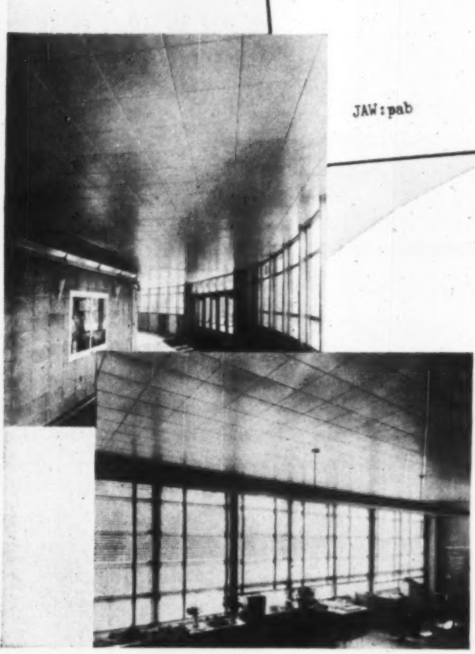
JAW:pab

Eliminating radiators and convectors provides additional valuable space not available with conventional systems - also lower initial accommodation costs

Floors are always warmer than the temperature since the Burgess-Manning ceiling does not depend on air movement for heat transfer - there are no drafts

No other heating method provides the same uniformity of temperature with essentially no differential from floor to ceiling

Maximum heat transfer efficiency is attained with substantial fuel economy with maintenance costs considerably lower



Mr. Whitehead's letter confirms the superiority of the Burgess-Manning Radiant Heating, Cooling and Acoustic Ceiling . . . which offers schools

- maximum pupil comfort
- acoustical efficiency
- attractive appearance
- structural simplicity
- operating economy
- maintenance savings

From the standpoint of comfort and efficiency in schools . . . large and small . . . *there is no comparison* with the Burgess-Manning Radiant Heating, Cooling and Acoustic Ceiling!

For interesting information on how the Burgess-Manning Ceiling will fit into your school construction — new and remodeling . . . Write for **Bulletin 138-3G.**

Heating Cooling Acoustic

BURGESS-MANNING COMPANY
Architectural Products Division
749 East Park Avenue • Libertyville, Ill.

If you're a heads-up, both-feet-on-the-ground kind of man who knows his way around in business – you're sold on your businesspaper. You know from profitable experience, there's nothing else in print so packed with facts, news, and good ideas that help you stay on top in business as the advertising and editorial pages of . . . your businesspaper.

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Heating Piping & Air Conditioning

ABP BUSINESS PAPER LEADERSHIP ABC AUDITED PAID CIRCULATION One of a series of advertisements prepared by the ASSOCIATED BUSINESS PUBLICATIONS

EQUIPMENT DEVELOPMENTS

Continued

ALLIED CONTROL

Solenoid Valves . . .

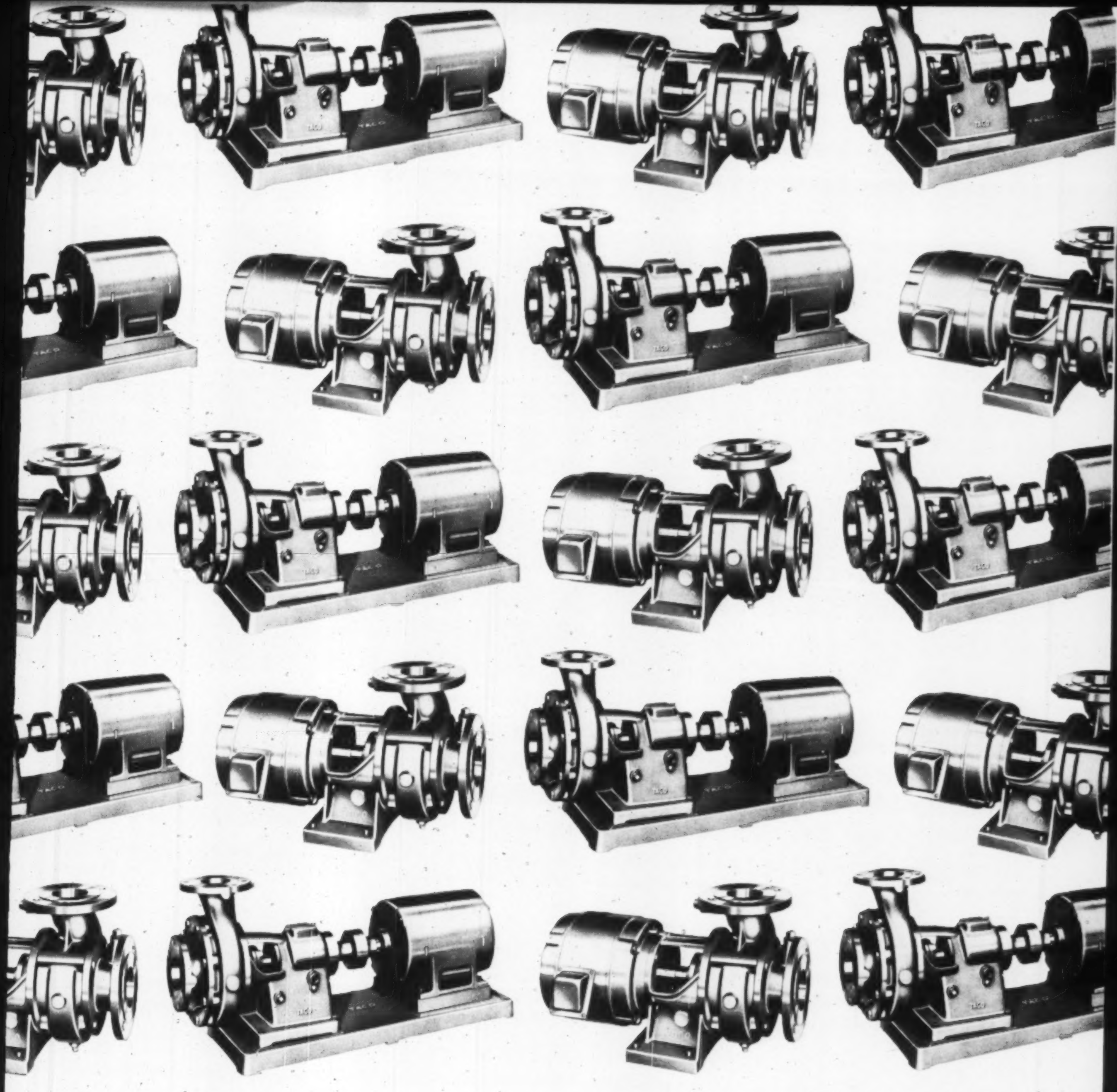
. . . for flow control in oil burners, pneumatic instruments, and other applications. Available in two and three-way types, normally open or normally closed, for a-c or d-c operation, conduit or grommet housings. Time delay, metering, free venting, and three-way directional valves also available. *Allied Control Co., Inc., 2 E. End Ave., New York 21, N.Y.*

Dustless Air Drill . . .

. . . combination drill and hammer for placing concrete anchors in all types of building construction. Firm's "15DLK" drill kit available with adaptors for concrete anchor sizes from 1/4 to 3/4 in. and with a dust extractor unit which attaches to the drill. — *Thor Power Tool Co., 175 N. State St., Aurora, Ill.*

Stress Relief for Welds . . .

. . . portable, combination unit for both induction and resistance heating of weldments. Self-contained, transformer type electrical heater mounted on wheels. Stresses relieve pipe weld in 2 to 14 in. OD pipe with thicknesses up to 2 in., and at temperatures to 1375 F. Literature sent on request. — *Electric Arc, Inc., 152 Jelliff Ave., Newark 8, N.J.*



TACO Stocks your Custom-Built Pumps!

That's right. By specifying any *standard* TACO "LP" pump, with its many options, you can actually order a custom-designed, single stage centrifugal pump to precisely meet your requirements!

For Hospital applications, for example, specify any standard "LP" with sleeve bearings and quiet motor. For industrial applications merely specify the *same* "LP" with ball bearings and a regular motor.

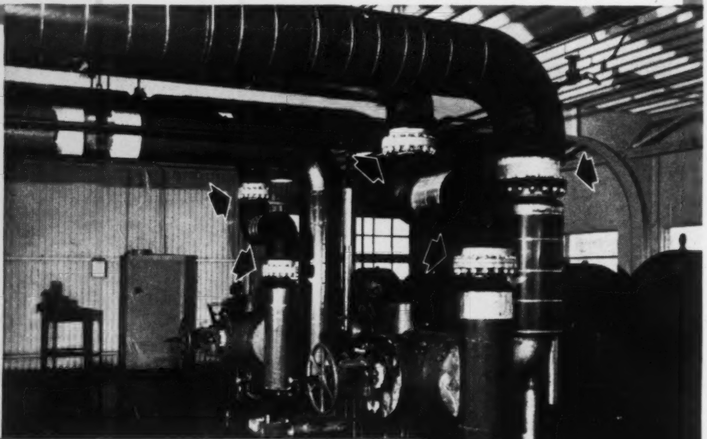
And, just as easily, you can specify an "LP", base-mounted or close-coupled . . . with mechanical seals or stuffing boxes, with or without cooling jackets . . . shafts or shaft sleeves in stainless steel and so on. What's more, every "LP" provides many extras, such as advanced design throttle bushing, oil slinger ring lubrication, centerline discharge and many more. Get complete specifications . . . specify "LP". All products in the broad TACO line are "efficiency engineered" to provide maximum performance and economy on all your installations. Write TACO HEATERS, INCORPORATED, 1160 Cranston Street, Cranston 9, R. I.

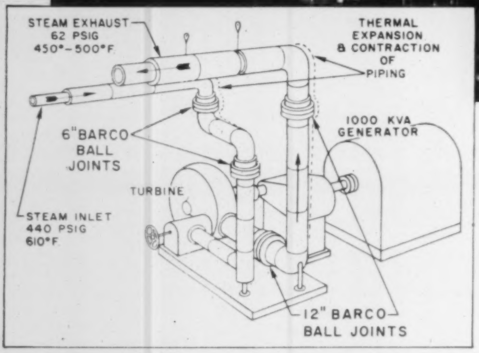
TACO

Taco

SERVING THE HYDRONIC INDUSTRY SINCE 1920

Barco Saves Time, Money on Steam Turbine Piping—





BARCO

BALL JOINTS

1. Handle Expansion **2. Relieve Torsion** **3. No "End Thrust"**

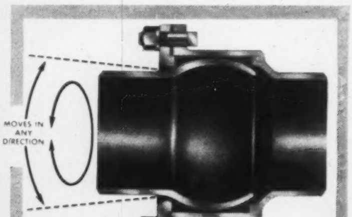
PROBLEM For the turbine installation shown above, layout of the piping presented involved pipe stress calculations to allow for thermal expansion and to eliminate torsional effects. In addition, a considerable expenditure had to be allocated to cover construction of heavy pipe anchoring and to control expansion "end thrust". *Could engineers find a better way to solve these problems? THEY DID! . . . and they saved about $2,000.00.*

ANSWER Instructions were simple: (A) "Install Barco Ball Joints —two* in each riser near turbine." (B) "Cut loose anchor stops; allow piping to move freely in all directions." (C) "Use spring hanger supports for the long horizontal runs of piping."

*Standard Type N for exhaust; High Temperature Type HT Joints for steam inlet lines.

Barco Ball Joints provide convenient points of flexibility in piping to allow for both expansion and twisting. They develop NO "END THRUST"; expensive anchoring is not required. Easy to engineer. Rugged all-steel construction with no thin wall sections, no critical points of fatigue, no rubber seals. No lubrication required. Sizes and styles to meet your requirements. *Ask for new Bulletin 31B, "Thermal Expansion and Contraction in Piping."*

BARCO MANUFACTURING CO.
541B Hough Street, Barrington, Illinois
In Canada: The Holden Co., Ltd., Montreal



EQUIPMENT DEVELOPMENTS

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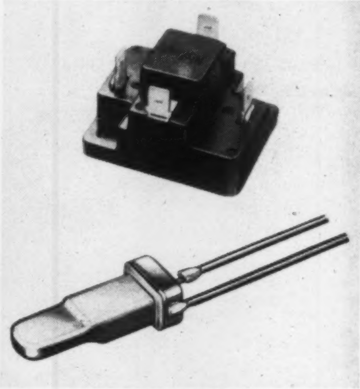
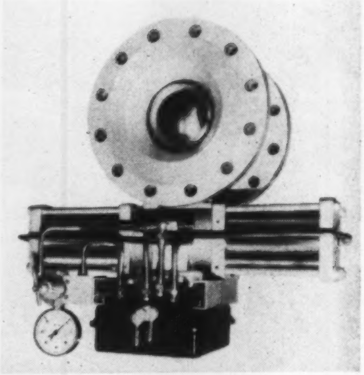


Compressor Protectors . . .

. . . internally-mounted motor winding thermostat-supplementary overload systems. Sensitive to both current and temperature, units cover a range of compressor ratings from ½ to 5 hp. single phase, and 2 to 7½ hp. three phase. — *Texas Instruments, Inc., 34 Forest St., Attleboro, Mass.*



Ball Valve Positioner . . .

. . . unit made by the *Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland* 10, provides automatic controlling of pipe line flow when used with firm's ball valve and pneumatic operator. Positioner translates signals from the controller to a pneumatic impulse that acts upon the valve. — *Jamesbury Corp., 45 New St., Worcester 5, Mass.*

The MARSH way is the SURE way–

You'll have a new conception of how *uniformly good* radiator valves, traps and vents can perform when you make the job Marsh all the way through.

Take the Radiator Valve and Trap illustrated here, for instance:

The Marsh Radiator Valve is *truly* packless—not just *called* packless. This valve has no "packing" whatever… instead, the ingenious Marsh annular mechanical seal that keeps it drip tight throughout its far longer life.

And Marsh Radiator Traps are equally sure-footed… have the famous Marsh Diaphragm—extremely rugged, but so sensitive that it never fails to close tight on steam, yet opens instantly to pass condensate and air at only a few degrees below closing temperature.

Yes, the Marsh way is the sure way… Valves, Traps, Vents, F & T Traps, designed, built and tested to give lasting satisfaction in the Marsh tradition. Ask for up-to-date Heating Specialties Catalog 76-H.

MARSH INSTRUMENT COMPANY
Division of Colorado Oil and Gas Corporation
Dept. T, Skokie, Illinois
Marsh Instrument & Valve Co., (Canada) Ltd.
8407 103rd St., Edmonton, Alberta, Canada

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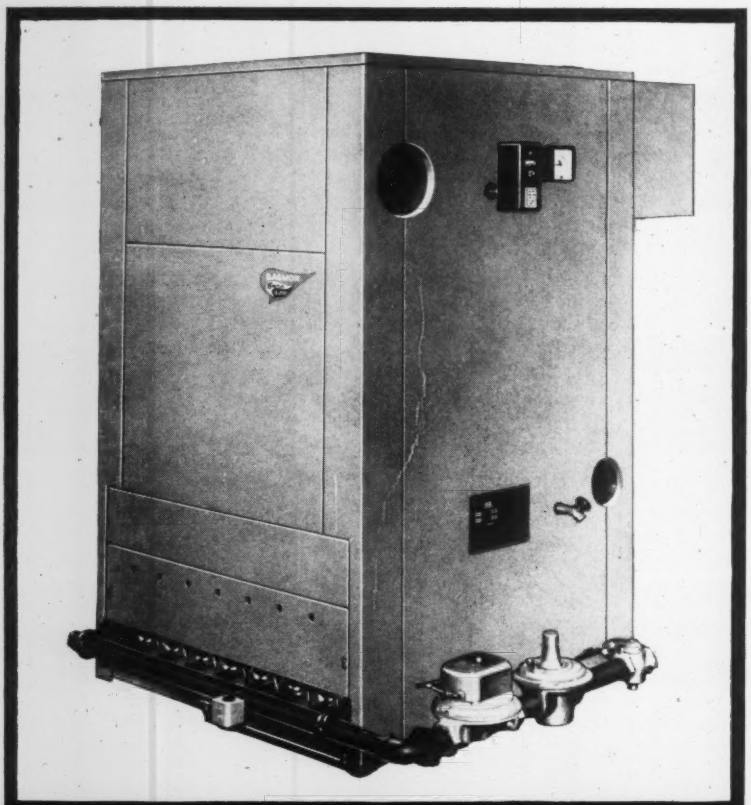
SINCE 1865



Hit Heavy Duty Heating Jobs "Right on the Nose!"

BASMOR 600 SERIES GAS-FIRED BOILER—
THE BIG BOILER IN THIRTY-SIX BIG SIZES

Need 5,800,000 BTU input per hour? Or, 3,770,000, or 725,000? The new Basmor 600 Series Boilers present a range of sizes—6 to 41 sections—for "tailored-to-the-job" selection.

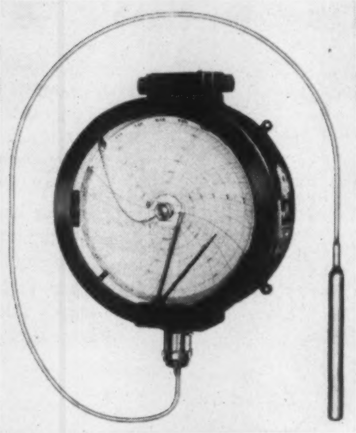
This accurate meeting of big heating demands, coupled with Basmor's finer features insure efficiency and economy in any hot water, steam or vapor system, and for large volume water heating by indirect method.

Designed for use with all gases, including LP-Gas and LP-Air mixtures. AGA approved. New ribbon burners, and rugged cast iron sections with patented "staggered heat travel" for maximum heat transfer. 100% safety controls. Split panel housing and steel base for labor-saving assembly.

Get the facts on all the better built Basmor Boilers . . . write today!

Basmor — Little

BASTIAN-MORLEY CO., INC.
(Incorporating H. C. Little Burner Co., Inc.)
LAPORTE, INDIANA
Branch Plants: San Rafael, California; Pittsburg, Texas



Temperature Control . . .

. . . a recording impulse-type provides variable electrical input to controlled equipment so that changes in temperature within modulating range automatically produce proportional changes in heat input. Normal modulating range of "RES" control is eight percent of scale range. 10-in. diameter calibrated chart records temperature. — *Partlow Corp.,* 544 *Campion Rd., New Hartford, N.Y.*

Ball Type Indicator . . .

. . . for flows down to 0.075 gpm water and 0.50 cfm air or gas. Flow causes ball to dance in glass dome. Made in ½ in. pipe size for pressures up to 100 psi with die-cast bronze body, and either nylon or "Teflon" ball. Unit has only one moving part. — *McIntosh Equipment Corp.,* 15 *Park Row, New York* 38.

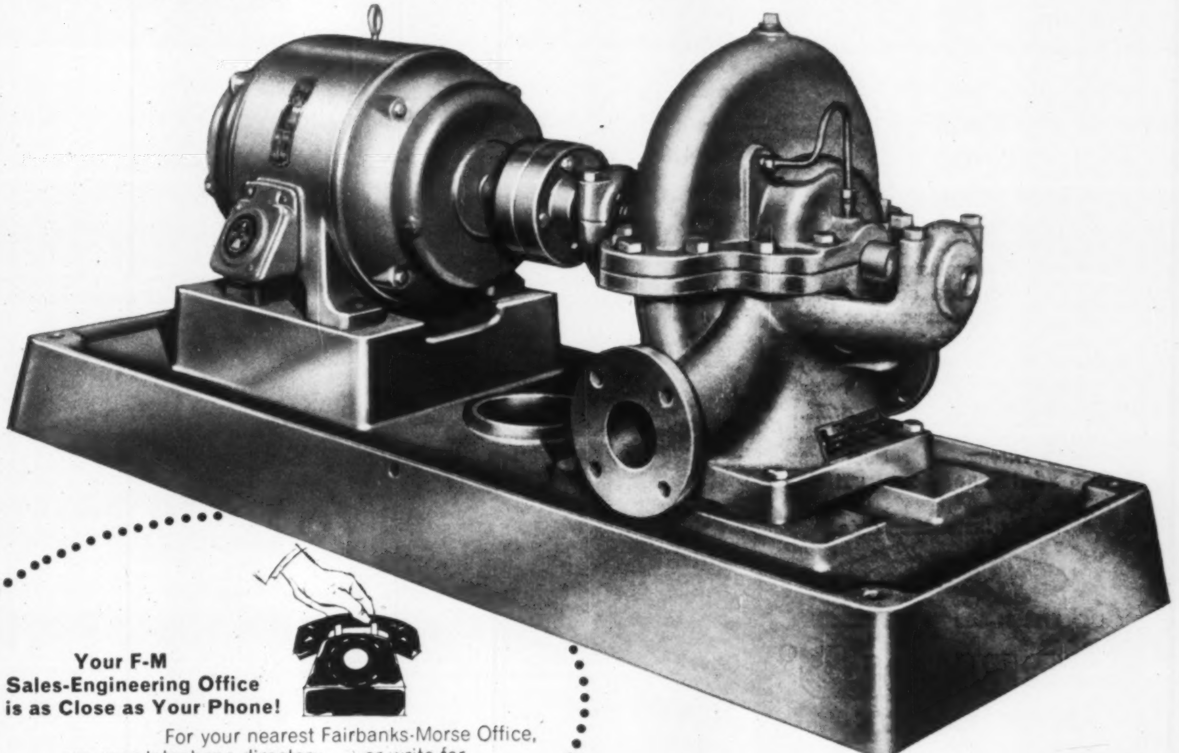
Fairbanks-Morse Announces!

A NEW SPLIT-CASE PUMP

FOR THE AIR CONDITIONING INDUSTRY

specifically designed for **MODERATE COST INSTALLATIONS**

Single Stage, Horizontal Split-Case Centrifugal Pump for Chilled Water, Circulating or Booster Duty; Cooling Towers or General Water Supply.



Your F-M Sales-Engineering Office is as Close as Your Phone!

For your nearest Fairbanks-Morse Office, see your telephone directory . . . or write for the #5820 pump line specification sheets: c/o Fairbanks, Morse & Co., Pump and Hydraulic Division, Kansas City, Kansas

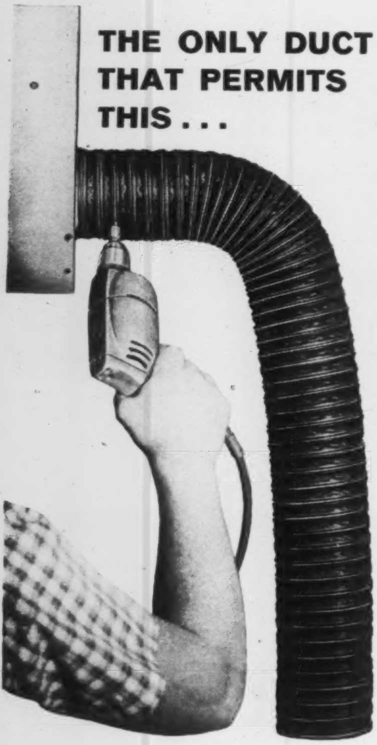
NOTE THESE DESIGN FEATURES!

- Replaceable casing wearing rings . . . for increased pump service life
- Mechanical shaft seals (or packing box)
- Sealed prelubricated bearings requiring no lubricating service
- Heavy cast-iron base, drip-lip design

Fairbanks, Morse

Pump and Hydraulic Division

A MAJOR INDUSTRIAL COMPONENT OF **FAIRBANKS WHITNEY CORPORATION**



THE ONLY DUCT THAT PERMITS THIS . . .

Save time, and cost of clamps, when connecting flexible duct to metal fittings.

Wiremold's exclusive flat metal spiral construction accepts self drilling-tapping screws. Just 2 or 3 of these keep duct securely in place. (No. 7 x ½" drill screws.)

Groove in metal spiral holds the screw in position as it drills. One-handed fastening!

Only Wiremold Air Duct has this additional cost-cutting feature.

Write for installation data.

see us at show

BOOTH N-439 FEB. 13-16

WIREMOLD®
AIR DUCT

THE WIREMOLD COMPANY • HARTFORD 10, CONN.

THE WIREMOLD CO., HARTFORD 10, CONN. 1-1C
Please send installation data sheet.

name
company
address
city state

EQUIPMENT DEVELOPMENTS

Continued

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1000
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Temperature Control . . .

. . . a double-target indicating-controlling pyrometer provides a second control point for secondary or additional action. Available in 11 ranges from 0-100 to 0-3000 F. as well as an environmental test chamber range of −100 to 300 F. Unit has die cast aluminum case. — *Alnor Instrument Co., 418 N. LaSalle St., Chicago 10.*

Vacuum Pump . . .

. . . miniature 1/12 hp oil-less motor-powered compressor and vacuum pump. Two models available: "LV" has 1.9 cfm displacement and is capable of continuous operation up to 27 in. vacuum; "LC" has 1.43 displacement, continuous operation to 65 psig. Units operate at 1725 rpm with split-phase, induction-type motors. — *Bell & Gossett Co., Morton Grove, Ill.*

AirMpeler

LO-BOY
CENTRIFUGAL
ROOF EXHAUSTERS

Enhance the Beauty of Building Skylines

Pats.
Pend.

Lowest Silhouette Design

Forward or Backward Curve Wheel Within . . . . or Out of Scroll Housing

Motor mounting on side of structure support . . . out of line of air stream reduces height of Lo-Boy models nearly 50% of older designs.

LOW WIND RESISTANCE
SIZES 10"-72" 600-47,000
CERTIFIED C.F.M. RATINGS

- QUALITY ● BEAUTY
- PROVEN PERFORMANCE

Write for bulletin Ha-100 60

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P.O. Box 182
Stillwater, Minnesota
MEMBER OF THE AIR MOVING & CONDITIONING ASSN.

NOW AVAILABLE IN HANDBOOK FORM!

PRACTICAL INDUSTRIAL VENTILATION DESIGN
BY John H. Clarke
KEENEY PUBLISHING COMPANY
6 NORTH MICHIGAN AVENUE
CHICAGO 2, ILLINOIS

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BY JOHN H. CLARKE

Ten of the most valuable articles *Heating, Piping & Air Conditioning* has ever published on industrial ventilation are now available in permanent handbook form.

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ROCKWELL
RESILIENT SEATED
BUTTERFLY
VALVES

SAVE SPACE
Valve face-to-face is a fraction of the face-to-face of a gate valve. We call it a "wafer" valve.

SAVE WEIGHT
From 60 to 80 percent, depending on size.

SAVE COST
In initial outlay and in overall maintenance.

SAVE TROUBLE
Valve disc shuts off leak-tight against resilient seat from maximum line pressure to high vacuum. The disc cannot jam. Valve is self-cleaning. "Keelok" snap-in type liner is renewable. Control may be manual or automatic.

Write for Bulletin 590X

W. S. ROCKWELL COMPANY
2700 Eliot St. • Fairfield, Conn.

Made and sold in Europe by
COCKBURNS, Ltd., Glasgow S.W.2, Scotland

RECENT TRADE LITERATURE . . .

▶ *AIR CONDITIONING SELECTOR*—works like a slide rule, in circular form, to aid in selecting high induction air conditioning units when designing new systems. Size, nozzle pressure, total capacity, and cfm of unit required determined immediately. Also gives alternate selections. *Carrier Air Conditioning Co., Carrier Parkway, Syracuse 1, N.Y.*

▶ *AIR CONTROL VALVES*—specification catalog Bulletin 60-1 describes mechanically and manually operated units. Covers 1/4 in. NPT two-position balanced spool valves, normally closed or normally open two-way, three-way, and four-way styles. Units utilize firm's valve segment which allows thousands of valve styles constructed from less than 50 standardized parts. *Hoffman Valves, Inc., 2360 W. Dorothy Lane, Dayton 39, O.*

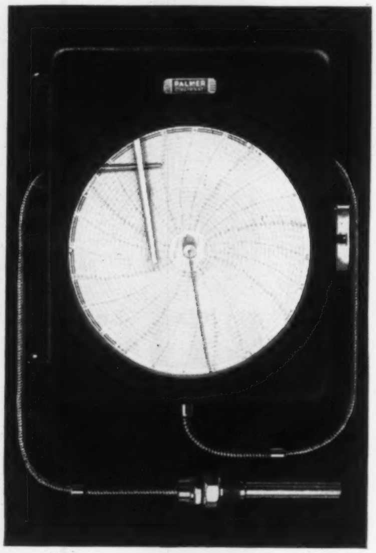
▶ *AIR DIFFUSERS*—four page Bulletin 31F describes and illustrates linear, square, rectangular, and circular ceiling air diffusers, grilles and registers, high velocity equipment, and air recovery and purification cells and canisters. *Connor Engineering, Danbury, Conn.*

▶ *ALUMINUM PROCESS PIPING*—four page bulletin gives mechanical properties, list of chemicals which corrosion resistant pipe can convey, and a price list comparing other pipe with firm's product. Specifications given. *Reynolds Metals Co., West Broad St., Richmond 18, Va.*

▶ *ARC WELDING*—12 page Bulletin AV-111 outlines program in arc welding education available at firm's plant. School teaches skills necessary to use various metallic arc welding processes. *The Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17.*

PALMER

MERCURY ACTUATED RECORDERS
Into this modern Mercury Actuated Recorder has gone all the skill of Palmer Master Craftsmen



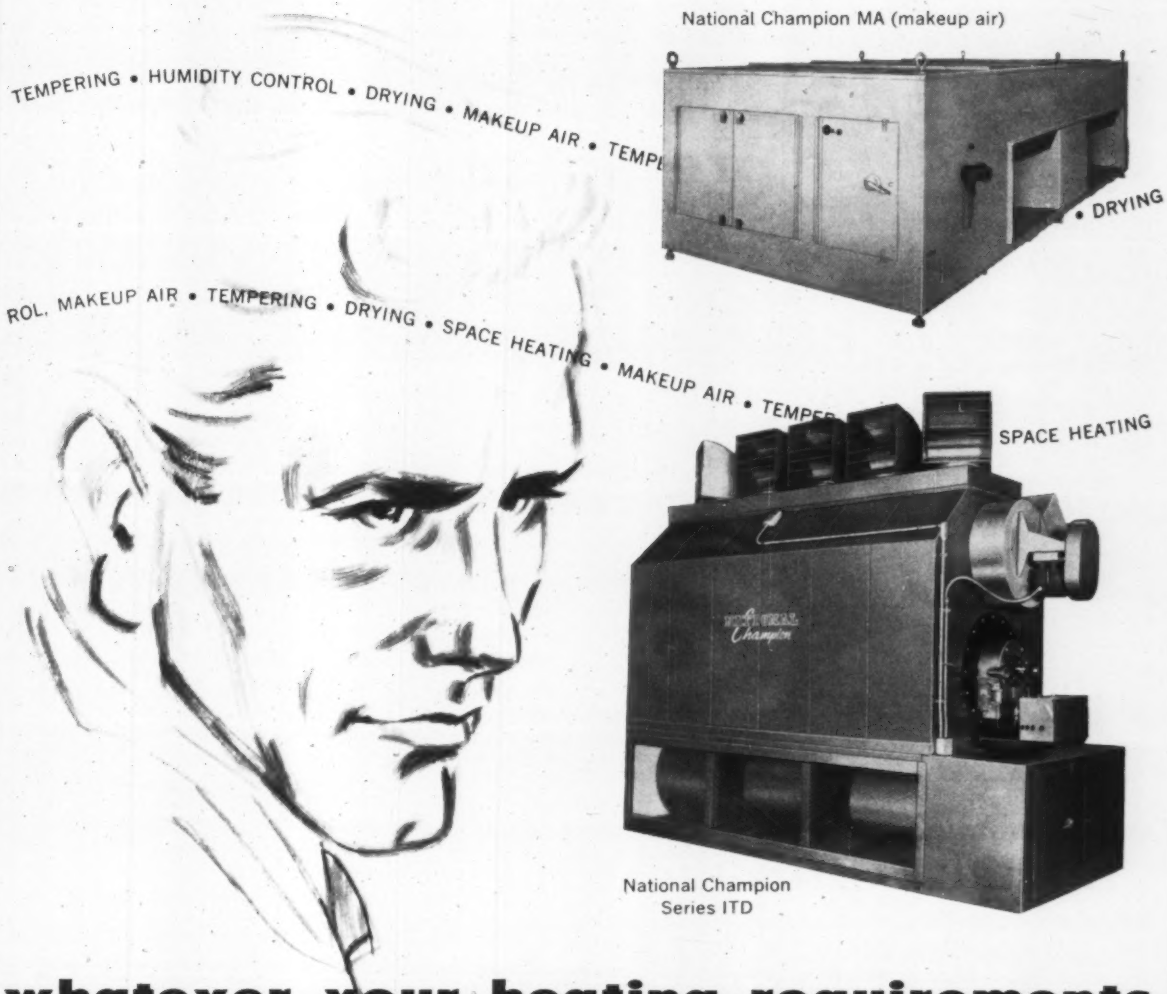
Readings are clearer, smoother and more precise than ever thought possible. In fact readings are so amazingly improved that maintenance is never needed under normal uses.

Recording Thermometers feature twelve inch die-cast aluminum case with black wrinkle or white satin finish. Single or multiple pen construction. Electric or spring wound clock, 24 hour or 7 Day Revolution. Flexible Armor and bulb of stainless steel. Ranges: —40 to 1000°F. or Equivalent in °C.

Send for Bulletin No. 45
Consult your Classified Directory

PALMER

PALMER THERMOMETERS, INC.
Mfrs. of Industrial Laboratory,
Recording and Dial Thermometers
Cincinnati 12, Ohio


TEMPERING • HUMIDITY CONTROL • DRYING • MAKEUP AIR • TEMPE
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ROL, MAKEUP AIR • TEMPERING • DRYING • SPACE HEATING • MAKEUP AIR • TEMPER
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National Champion MA (makeup air)

National Champion
Series ITD

whatever your heating requirements

BE CONFIDENT

From space heating to makeup air, National Leads the Industry!

National Champion space heaters offer the largest selection of styles and sizes to meet *every* heating requirement. *Only* National gives you a choice between custom-designed burners and heaters with conventional packaged burners.

National Champion MA units solve any makeup air problem, whether tempering, drying or humidity control. Designed for inside or outside installation, National Champion MA's operate independently of present heating systems and provide 100% combustion efficiency.

For heating or makeup air, you can place your confidence in National Champion!

SPECIFY...

NATIONAL
Champion

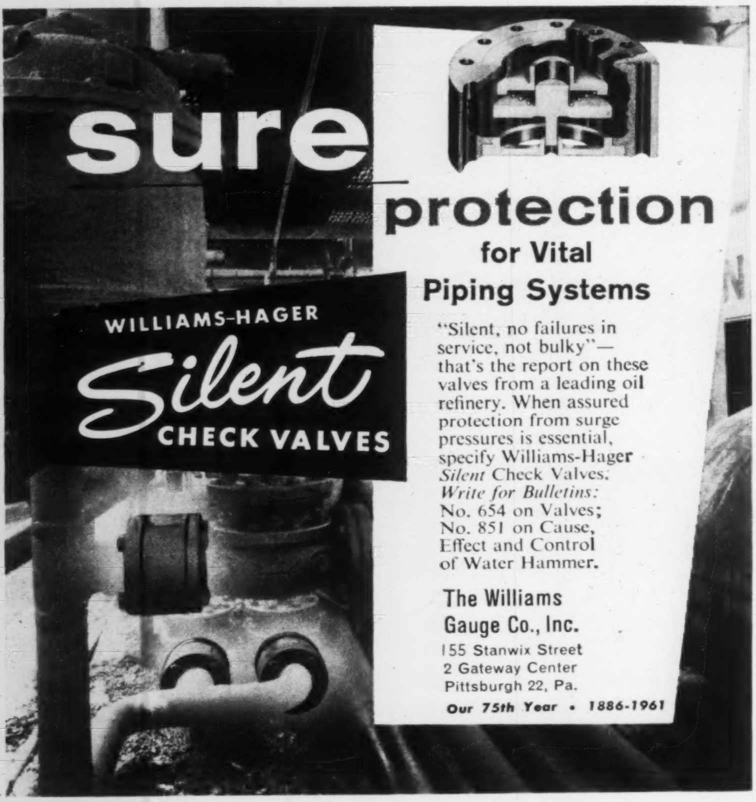
FIRST IN THE SPACE HEATING INDUSTRY

National Champion, Series ITD. 6 styles, 96 sizes —capacities 400,000 to 4,000,000 BTU's with gas, oil or combination fuel. UL & AGA approved.

National Champion MA (Direct-fired makeup air). Complete range of sizes from 8,000 to 150,000 CFM, full modulating 25 to 1 turn-down ratio.

NATIONAL HEATER COMPANY INC, 2475 DOSWELL AVE. • ST. PAUL 8, MINNESOTA

UNITS ON DISPLAY AT PLANT MAINTENANCE AND ENGINEERING SHOW JANUARY 23-26, AND INTERNATIONAL HEATING AND AIR CONDITIONING EXPOSITION FEBRUARY 13-16.



sure protection for Vital Piping Systems

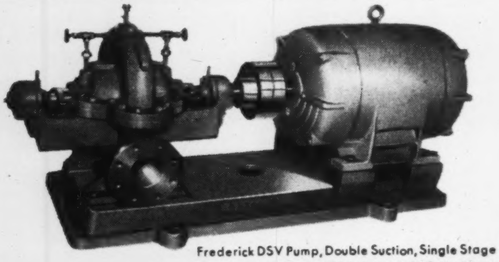
WILLIAMS-HAGER *Silent* CHECK VALVES

"Silent, no failures in service, not bulky"—that's the report on these valves from a leading oil refinery. When assured protection from surge pressures is essential, specify Williams-Hager *Silent* Check Valves.
Write for Bulletins:
No. 654 on Valves;
No. 851 on Cause, Effect and Control of Water Hammer.

The Williams
Gauge Co., Inc.
155 Stanwix Street
2 Gateway Center
Pittsburgh 22, Pa.
Our 75th Year • 1886-1961

FREDERICK CENTRIFUGAL PUMPS

for
Air
Conditioning,
water
supply,
drainage
and
fire protection.



Frederick DSV Pump, Double Suction, Single Stage
Available in 1½" through 24" discharge

CUSTOM-BUILT FOR EFFICIENT, DEPENDABLE SERVICE

Whatever your air conditioning or other pump needs, you can choose from a complete line of Frederick Centrifugal Pumps—custom engineered and built for you. Exclusive features assure long service life under the most rugged conditions. In fact, many Frederick Pumps have been in service for over 40 years. Easy to install, easy to operate. Prompt repair service and parts available.

Write for Bulletin 104-A describing mechanical features, giving technical data.

Frederick IRON & STEEL, INC.
FREDERICK Established 1890 MARYLAND

RECENT TRADE LITERATURE

Continued

▶ *ASBESTOS INSULATION*—four page folder lists fire resistance approvals gained for sprayed "Limpet" from UL and NBS. Gives sample specifications for product used for thermal insulation, noise reduction, or condensation control. Tables present physical characteristics. *Keasbey & Mattison Co., Ambler, Pa.*

▶ *BALL VALVE*—two page catalog sheet, Circular 611, details operation, shows cut-a-way views, ratings, dimensions, and applications. Specific design features included. *Lunkenheimer Co., P.O. Box 360, Annex Station, Cincinnati* 14.

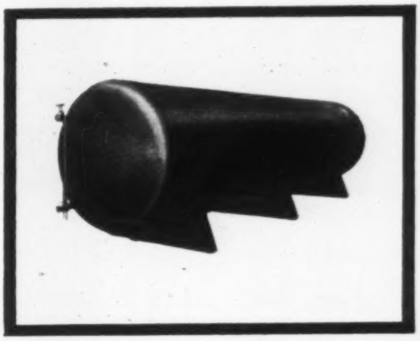
▶ *BASEBOARD RADIATION*—four page Catalog BB-60 gives complete ratings, dimensional, and working data on latest models of "Rittling 485" units and accessories. Illustrations show new silent roller bearing support for finned tube heating element. *The Rittling Corp., Buffalo* 5, *N.Y.*

▶ *BOILER CLEANING*—two page check list for maintaining operating efficiency. Each item on check list has corresponding remarks. *Cleaver-Brooks Co., Milwaukee* 12.

▶ *BOILER RETURN CONTROL VALVE*—eight page bulletin describes valve with fixed orifice combined with multiple thermobalanced expanding valves (number varying with capacity requirements) to adjust return flow rate to recuperative capacity of the boiler, thereby preventing thermal shock. Lists sizes, installation instructions, and operational characteristics. *Superior Combustion Industries, Inc., Times Tower, Times Square, New York* 36.

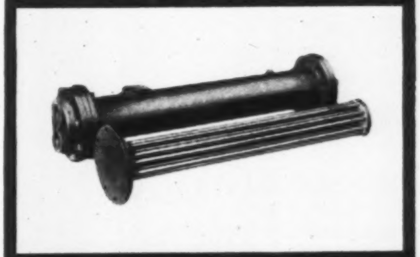
▶ *CENTRAL AIR CONDITIONERS*—two page bulletin describes units with matching heating coils in three to 92 nominal ton sizes. Chart gives

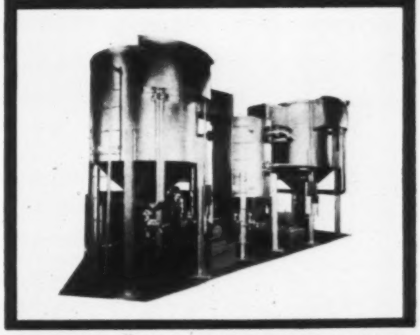
Specify
ELLICOTT
BRANDT
Vessels



with CUSTOMIZED CORROSION CONTROL

Stop corrosion, eliminate rusty water or contaminated contents before it starts by specifying Customized Corrosion Controlled Storage and Processing Vessels by Ellicott-Brandt. Ellicott-Brandt has successfully solved many problems involving the use of steel alloys and nonferrous metals such as: Copper Silicon, Clad Steels, Stainless Steels, Nickle, Monel, Inconel and Aluminum. A complete line of Novelon Linings of cement, rubber, lead, copper and the new plastic linings that allow much higher heat resistance can be applied to low cost carbon steel. Ellicott-Brandt vessels with Customized Corrosion Control can solve the corrosion problems in storing and processing water, acid, food and chemicals. Send us your fabricating problems today. Representatives in major cities.



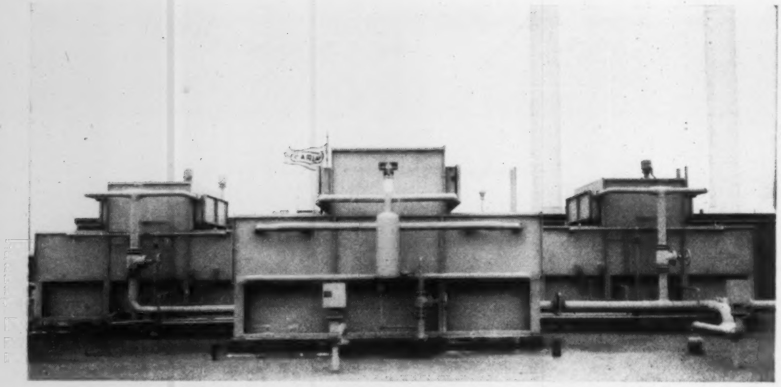


ELLICOTT
BRANDT

1700 RIDGELY STREET
BALTIMORE 30, MARYLAND

formerly: ELLICOTT FABRICATORS, INC.
CHARLES T. BRANDT, INC.

Specify ELLICOTT-BRANDT
THERE'S NO EQUAL



GET TROUBLE-FREE CONDENSING AND GREAT POWER AND LABOR SAVINGS

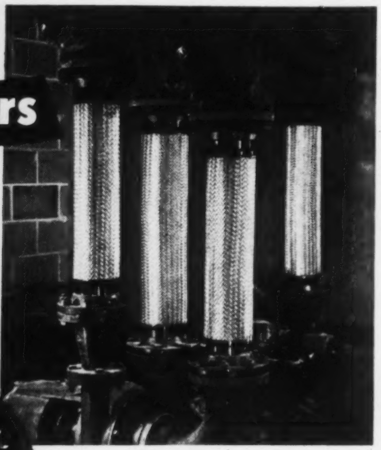
NIAGARA AEROPASS CONDENSERS give you trouble-free, automatic refrigeration at the least spread between head-pressure and suction pressure. You gain a great power saving. You also get removal of superheat before condensing, condensing at subcooled temperature and a refrigerant fully purged of oil. Out-door air takes up heat of condensation through evaporation of the least amount of water; low temperature condensing means freedom from scaling and loss of capacity. Niagara sectional design offers you lower costs for more compact equipment, easier to keep up. You get always full capacity, "new plant" efficiency and continuous savings such as 95% of condensing water cost that add to your profit. Managers who know their costs buy Niagara Aeropass Condensers.

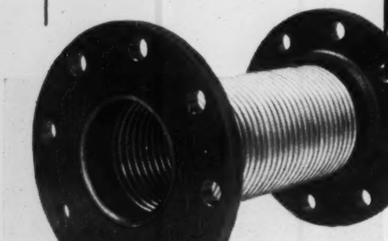
Write for Bulletin 131

NIAGARA BLOWER COMPANY

Dept. HP-1, 405 Lexington Ave., New York 17, N.Y.

Niagara District Engineers in Principal Cities of U. S. and Canada





***MetraFlex**

Pump Connectors

- ABSORB NOISE
- ISOLATE VIBRATION
- CORRECT MISALIGNMENT
- SIMPLIFY INSTALLATION

Bronze . . . Stainless . . . Steel

BRAIDED or PLAIN THREADED or FLANGED ENDS

Diameters: 2 inches thru 12 inches
Pressures: from a Vacuum to 250 lbs.

Experienced MetraFlex Engineers are at your service. Consult with them about installation problems on any Air Conditioning, Heating, Plumbing or Refrigerating job. No Obligation. Free Technical Brochure.

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Write, Wire or Call today.
Phone: ORchard 6-0011

The MetraFlex Co.
4948 Dempster Street • Skokie, Ill.

RECENT TRADE LITERATURE

Continued

data on capacities, air quantities, and available face areas of coils for the various sizes of suspended and floor mount models. Accessories also described. *Halstead & Mitchell Co., Bessemer Building, Pittsburgh* 19.

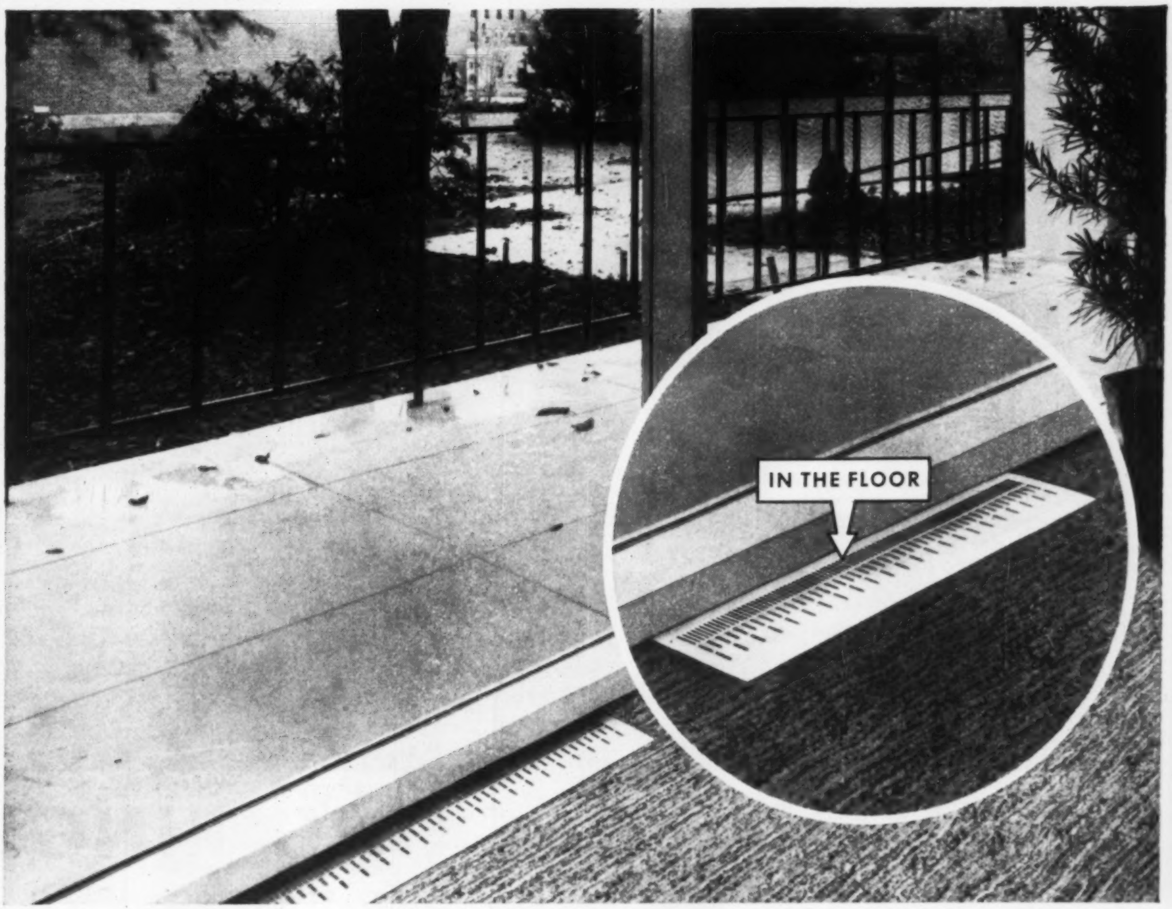
▶ *CENTRIFUGAL FANS*—eight page bulletin, DB2-306, describes small direct-connected, belted, and portable units. Specifications given. *Ilg Electric Ventilating Co., 2850 N. Pulaski Rd., Chicago* 41.

▶ *CENTRIFUGAL PUMP*—two page bulletin describes vertical two-stage split case unit. Capacities range to 1400 gpm and heads to 425 ft. Lists dimensions, parts, and specifications. *Aurora Pump Div., The New York Air Brake Co., 619 Loucks St., Aurora, Ill.*

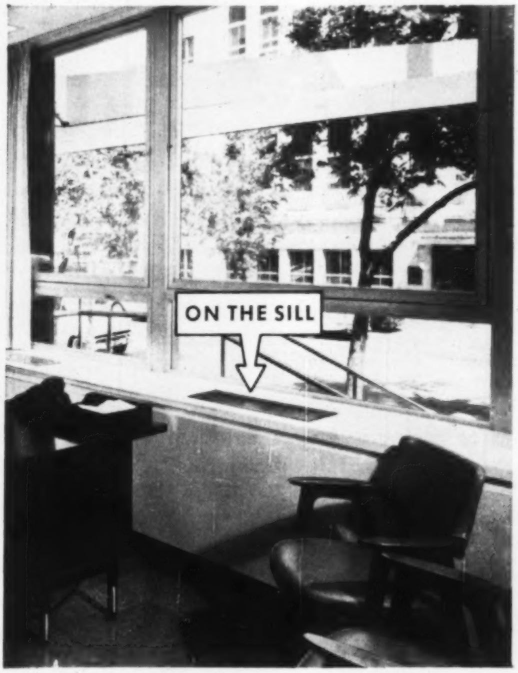
▶ *CENTRIFUGAL PUMPS*—12 page catalog, Circular No. 181, gives charts showing recommended temperature and pressure ranges for 10 classifications of firm's units from −350 to 1000 F and up to 1000 psig. Illustrations, descriptions, and specifications given for each unit. Make requests on company letterhead. *Dean Brothers Pumps Inc., 323 W. 10th St., Indianapolis 7, Ind.*

▶ *CONTROL VALVES*—eight page catalog J170-1 describes sliding gate and plate units in sizes from 1/4 to 6 in. for use on steam, air, water, oil, gas, and chemicals. Lists applications, operating features and characteristics, construction materials, pressure and temperature limitations, flow curve, sizing charts, and sample specifications. *OPW-Jordan, 6013 Wiehe Rd., Cincinnati* 13.

▶ *COOLING TOWER PUMPS, PIPING*—eight page "Six Step Manual for Sizing Cooling Tower Pumps and Piping" illustrated with diagrams and charts. Lists capacities of firm's series "1522" and "1531" pumps.



New Anemostat Stainless Steel Diffus-A-Plate



- withstands heavy traffic
- saves space
- provides excellent air diffusion

Anemostat Diffus-A-Plates for floor or sill application diffuse a pattern of conditioned air up the exterior wall and across the ceiling, insuring draftless comfort in the occupied zone.

Suitable for heating, ventilating and cooling. Induction type Diffus-A-Plates can be used as separate units or in continuous sections. Due to the design of the discharge openings which measure 1 inch by 1/4 inch, these ruggedly constructed diffusers are heel and pencil proof.

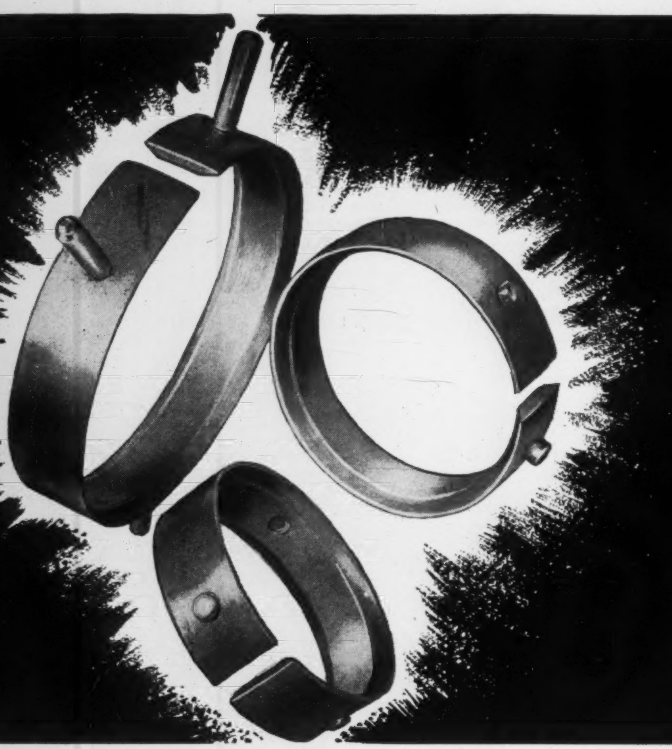
Write for Anemostat Catalog DAP-70.

ANEMOSTAT®

ANEMOSTAT CORPORATION OF AMERICA

10 East 39th Street, New York 16, N. Y.
Representatives in Principal Cities

AC1374



- ✓ NUB diameter automatically sets welding gap for root pass.
- ✓ Robvon Backing Rings Form perfect welded-joints eliminating slag and icicles.
- ✓ Robvon Backing Rings Allow complete penetration and fusion.
- ✓ Robvon Backing Rings Eliminate the necessity of tack welding.
- ✓ Robvon Backing Rings Radiograph perfect certified welds.

ROBVON BACKING RINGS

APPROVED FOR WELDED PIPE, VALVES, AND FITTING JOINTS

Available in carbon steel, wrought iron, chrome alloys stainless steel, aluminum and copper

TYPE CCC Designed for quick easy alignment of pipe where the variation in inside diameters is relatively great. Chamfered NUBS allow close tolerance fit-up and CLEAN STRIKE OFF. ROBVON rings are beveled to assure non-restricted fluid flow.

TYPE CC Designed to allow quick easy alignment of pipe where the inside diameters are slightly out of round. The welder has the choice of "STRIKING OFF" the NUBS or leaving them intact to be melted into the weld mass of the first root pass.

TYPE C Designed for precise close tolerance fit-up. Type "C" NUBS automatically sets root gap. The NUBS melt with the metal to give complete penetration and fusion.

Robvon also manufactures machined rings to customer's specifications All fabricated solid machined rings x-rayed. Write for full information

ROBVON
BACKING RING COMPANY

675 GARDEN STREET ELIZABETH, NEW JERSEY

RECENT TRADE LITERATURE

Continued

Tables show total equivalent pipe footage for different pump pressure heads and carrying capacities of various pipe sizes. *Bell & Gossett Co., Morton Grove, Ill.*

▶ *ELECTRICAL SWITCHES*—four page Bulletin B-30 describes metal-enclosed, snap-acting units. Gives installation and structural details, dimensional drawings, and force and movement specifications. Units rated: series "KL" 1 hp, 125 v a-c; 2 hp, 250 v a-c; 20 amp, 125, 250, 480 v a-c; 10 amp, 125 v a-c lamp load; also series "K" 20 amp, 125, 250, 480 v a-c; 0.25 amp, 250 v d-c; and 0.50 amp, 125 v d-c. *Unimax Switch Div., The W. L. Maxson Corp., Ives Rd., Wallingford, Conn.*

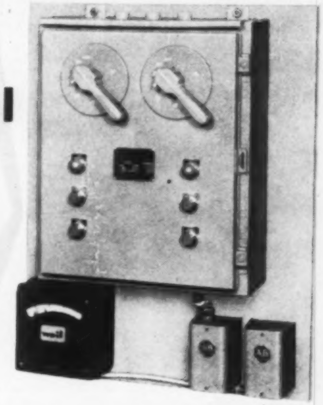
▶ *FAN ROOF VENTILATORS*—eight page Bulletin PRV-60 describes two basic types of units: a straight-through type and a dome type. Units feature low silhouettes, hinged discharge, and nylon damper-hinge bearings. Tables of sizes, dimensions, and performance data given. *L. J. Wing Mfg. Co., Inc., 2300 N. Stiles St., Linden, N.J.*

▶ *FELT GASKET, INSULATION MATERIAL*—eight grades of plain and reinforced graphite and carbon felts to be used for gaskets and insulation described in Bulletin 104. Data on permeability, resistance, density, strength, gage, and weight tabulated. *National Carbon Co., Div. of Union Carbide Corp., 270 Park Ave., New York 17.*

▶ *FILTER REGULATOR*—two page bulletin, 1111-A, describes unit for commercial and industrial control systems. Pressure die cast aluminum unit has maximum inlet pressure of 250 psi and outlet pressure ranges of 0-5, 5-35, 35-100 psi. Includes performance curve, construction specifications, applications, and a cut-away drawing. *Rockwell Mfg. Co., Meter & Valve Div., 400 N. Lexington Ave., Pittsburgh 8.*

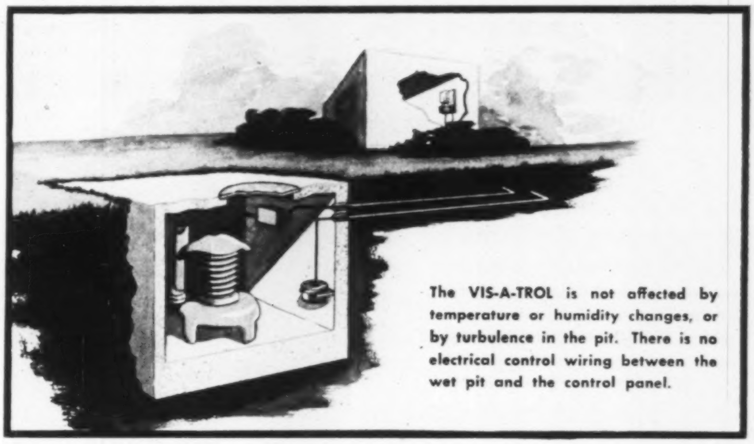
the weil Vis-a-trol

AUTOMATIC PUMP CONTROL and LIQUID LEVEL INDICATOR



for weil
- *Submersible sewage and sump pumps*
- *Vertical type sewage and sump pumps*
- *Septic Tank effluent pumps*

The weil VIS-A-TROL automatic control system is combined with a depth measuring device which shows the depth of liquid in the pit. The pumping rate can be compared with the in-flow at all times without looking into the wet pit. It is indicated on the instrument and responds instantly to level changes in the sump.



The VIS-A-TROL is not affected by temperature or humidity changes, or by turbulence in the pit. There is no electrical control wiring between the wet pit and the control panel.

The VIS-A-TROL can be installed in outside weather-proof enclosures or installed within a building and may be located as much as 300 feet away from the pumping pit. High and low limits of liquid level control are set at the instrument. It is never necessary to go into the wet pit for control adjustment.

See your weil representative or send for Bulletin AC-100

See the **weil VIS-A-TROL** and other new weil products at Booth 954-958 International Heating & Air-Conditioning Exp. Feb. 13th to 16th.

weil **PUMP COMPANY**

STAY ONE STEP AHEAD WITH weil

1514 North Fremont St. • Chicago 22, Ill.

ANTI-PARALLAX FACE
Anti-parallax BIMET® face eliminates reading errors when dial is viewed from any angle.

STAINLESS STEEL CASE
Stainless Steel Construction throughout, including the most rugged **Polished** Stainless Steel Case available for the ultimate in corrosion resistance and strength, is exclusively provided on all Moeller BIMETS.

Moeller Features

HERMETICALLY SEALED
Hermetically sealed with dry air to prevent entry of moisture and condensation throughout the life of the instrument.

RECALIBRATION
Exclusive Moeller external recalibration feature provides adjustment of pointer on scale so that scale is always upright and easily readable. Thermometer remains sealed. Only Moeller BIMETS offer the convenience and error-free readability of **vertically oriented** dials.

Provide Timeless Accuracy

You'll appreciate the superior accuracy, reliability and rugged construction of the NEW 3" and 5" BIMET® Thermometers. Silicone damping stabilizes the pointer against vibration assuring precise reading and reduced wear.

Moeller BIMETS offer superior reliability of measurement, easy, accurate reading, the most rugged construction, simplicity of installation and guaranteed accuracy of 1% of full scale.

The NEW 3" and 5" BIMETS are available for ranges from −100°F to +1000°F or −70°C to +400°C with glass or plastic fronts. Standard ¼" or ⅜" O.D. stems, up to 100" in length may be ordered in any angular position. Moeller exclusive swivel nuts or fixed connections are furnished.

Get your copy of BIMET® Catalog #225D from your Moeller Representative or write

SINCE 1867

MOELLER INSTRUMENT COMPANY, Inc.
132nd Street and 89th Avenue, Richmond Hill 18, N.Y.

Representatives in principal cities.

BIMET® is a registered trademark of Moeller Instrument Company, Inc.

RECENT TRADE LITERATURE

Continued

▶ *GAS VENT CONNECTORS*—four page GVI Bulletin #2 compares vent connectors type B vs. single-wall type C in a discussion. Characteristics of the two methods are compared on a diagram. *Gas Vent Institute*, 333 *N. Michigan Ave., Chicago* 1.

▶ *GATE, SWING CHECK VALVES*—16 page Catalog No. 60 gives illustrations, specification diagrams, and dimension tables for gate valves with screw, flanged, and hub ends, and swing checks with screw and flanged ends. Units bronze mounted. Special section illustrates and describes disc mechanisms and stems. *American Valve Mfg. Co.*, 22 *Bayview Ave., Manhasset, L.I., N.Y.*

▶ *GATE VALVES*—12 page brochure form 1011 describes units made of ductile iron. Series of ½ through 2 in. units feature spiral-wound gaskets and a spread flange design; 2 through 12 in. sizes incorporate buttressed flange construction. Engineering specifications, pressure-temperature ratings, testing data, application data, and properties of ductile iron given. *The Ohio Injector Co.*, 275 *Main St., Wadsworth, O.*

▶ *GLASS-LINED SMOKESTACKS*—eight page bulletin, No. SS-210 describes corrosion resistant units available in eight different colors. Compares glass-lined units to unlined units in regard to maintenance and other factors. Gives sizes, applications, operating temperature ranges, and accessories. *A. O. Smith Corp., Atomic and Process Equipment Div., Milwaukee* 1, *Wis.*

▶ *HEAT EXCHANGERS*—eight page Bulletin 120 describes double pipe units. Installation and maintenance manual gives a parts list and recommended spare parts inventory. Includes cross-sectionals and procedures for disassembly and cleaning. *Brown Fintube Co.*, 300 *Huron St., Elyria, O.*

SEE OUR CATALOG IN SWEET'S
OR WRITE FOR COPY

Install Insulation with

TUFF-BOND

Super-Strength Adhesives

TUFF-BOND #7
... fire-retardant adhesive for installing insulation

TUFF-BOND M-102-H
... duct liner adhesive

TUFF-BOND 21-C
... clear lap sealer and lap adhesive

TUFF-BOND 21-W
... white lap sealer and lap adhesive

TUFF-BOND #6
... non-flammable fire-retardant duct liner adhesive; meets Interim Federal Standard #00136.

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... for bonding rigid and semi-rigid plastic foams (polystyrene, urethane, isocyanate, etc.) to themselves and to other materials.

TUFF-BOND #12
... high pressure duct sealer

TUFF-BOND QUIK SET
... neoprene-base, fast-setting adhesive. Recommended for installing metal and nylon hangers to smooth surfaces.

TUFF-BOND GENERAL PURPOSE IMPROVED
... all-around adhesive for installing insulation, insulation hangers, etc.

Ask for literature and prices.

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INCORPORATED
DANVILLE 26, ILLINOIS

RECENT TRADE LITERATURE

Continued

▶ *INDIRECT WATER HEATER*—six page bulletin describes unit for instantaneous large volume water heating. Scotch Marine boiler and copper heat exchanger combine for indirect-fired use with gas or oil fuels. Lists capacities, recovery rates, and other data in chart form. Cut-away drawing shows principle of heating involved. *National Combustion Co.*, 101-06, 43rd *Ave.*, *Corona* 68, *N.Y.*

▶ *INDUCTION MOTORS*—eight page Bulletin 6100.1 gives design features, performance characteristics, and size range of firm's squirrel cage units. Stator encapsulation and open protected construction protects against water, acid, abrasion, and both mechanical and electrical abuse. *The Lincoln Electric Co.*, 22801 *St. Clair Ave.*, *Cleveland* 17.

▶ *INSTRUMENTS, FILTERS*—catalog lists equipment used for dust surveys, air pollution analysis, radiation protection, and sub-micron filtration apparatus. Complete specifications, operating characteristics given for 100 items. *Gelman Instrument Co.*, 106 *N. Main St.*, *Chelsea, Mich.*

▶ *MIXING BOXES*—for high velocity, double duct air conditioning systems, described in catalog 1100-B107. Gives data on application, specifications, engineering data, and noise levels, as well as selection and performance data with dimensional drawings. *Worthington Corp., Air Conditioning Div., Technical Publications Section, Ampere Station, East Orange, N.J.*

▶ *PACKAGED BOILER*—eight page bulletin, No. 4023, describes liquid phase unit in sizes from 1,250,000 to 4,375,000 Btu per hr input. Direct-fired, uses natural gas, propane, butane, No. 2 diesel oil, and kerosene. Modulates automatically, operating up to 600 F. *Vapor Heating Corp.*, 80 *E. Jackson Blvd.*, *Chicago* 4.

NEW from the specialists in air movement methods

Unretouched photograph demonstrates extraordinary rigidity of United's flat-oval duct assembly with new "Truss-Coupling" connections.

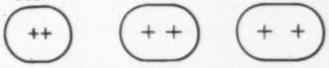
Manufactured FLAT-OVAL DUCT

United's flat-oval duct is designed for use where space limitations prevent the installation of circular duct. When combined with United's new, exclusive "Truss-Coupling" connection, static-pressure deflection and vibration amplitude are reduced more than 50% as compared with ordinary flat-oval duct assemblies, and their extent can be predicted and specified.

The design of a system utilizing United's flat-oval duct follows the same familiar procedures used with rectangular duct. United's Flat-Oval Duct Bulletin includes all necessary design specifications and procedures.

UNITED FLAT-OVAL DUCT AVAILABLE IN THREE ASPECT RATIOS

United's reinforced "Truss-Coupling," used with United flat-oval duct, permits the selection from shapes that bear the following relation to round duct:



10% flattening | 20% flattening | 30% flattening

Flat-oval duct is available in sizes equivalent to circular duct diameters from 10" through 46".

FLAT-OVAL DUCT MATCHED FITTINGS

Factory made elbows, tees, crosses, reducers, etc. have been designed and are manufactured by United to match United's flat-oval duct.

Write for United's Flat-Oval Bulletin.

SEE DISPLAY AT
15th INTERNATIONAL EXPOSITION
CHICAGO February 13-16
BOOTHS 874-973

spiral pipe division

United
SHEET METAL COMPANY INC.
COLUMBUS, OHIO · STOCKTON, CAL.

SPECIFY
General
RUBBER

Custom-Made

FLEXIBLE RUBBER
EXPANSION JOINTS AND PIPE
for your WATER · BRINE · GAS
CHEMICAL · PIPE LINES

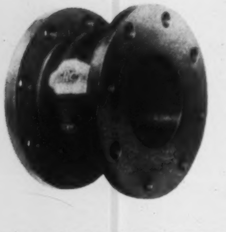
- Absorb Vibration, Noise and Water Hammer
- Prevent Expansion-Contraction Stresses
- Compensate for Minor Misalignment
- Stop Galvanic Action

RUGGED, LONG LIFE
FLEXIBLE FLANGED RUBBER PIPE

General Rubber offers two complete, time-tested lines of full-faced, flanged rubber pipe for air conditioning and heating systems. Both lines are made in standard pipe sizes from 1" to 12" for either 150 p.s.i.g. or 250 p.s.i.g. pressure service or for 30" Hg vacuum service.

Type F Full-Faced Flanged Rubber Pipe. General Rubber's Type F flexible rubber pipe is made with full-faced, integral rubber flanges. Installed with our galvanized steel split retaining rings, the resilient rubber flanges form a tight seal against the pipe flange without the need of gaskets. Bulletin 580.

SoundZorber® Wire-Reinforced Rubber Pipe. The rugged heavy-duty SoundZorber pipe repays its cost many times over. Its unique solid molded rubber flanges, with built-in steel flanges, will operate under the most adverse conditions. Bulletin No. 866.



Type GRC Rubber Expansion Joints. Long life, custom-made Type GRC Expansion Joints are available for pressures up to 150 p.s.i.g., in sizes from 1" to 72" I.D. Flexing action keeps rubber "alive," free from embrittlement and scale formation. Particularly valuable in systems handling corrosive and abrasive chemicals. Catalog No. 888.

OTHER GRC FLEXIBLE UNITS

- Screwed coupling Type S flexible pipe in standard pipe sizes from ¾" to 3". Bulletin No. 580.
- New Type G, Gen-Lok reinforced flanged flexible pipe for fast, perfect bolt hole alignment. Bulletin No. 580.

General RUBBER CORPORATION
50 SUMMIT STREET · TENAFLY, N. J.
TELEPHONES: N. Y.—OXford 5-0328 · N. J.—LOwell 7-0222

TECHNICAL SERVICE IN RUBBER
GRC

RECENT TRADE LITERATURE

Continued

▶ *PACKAGED BOILERS*—four page bulletin Form 3562 describes units with 396,000 to 1,800,000 Btu per hr capacities. Units fired with oil, gas, or gas-oil. Cut-a-way drawing points out individual features. *Petro, 3170 W. 106th St., Cleveland* 11.

▶ *PACKAGED WATER CHILLERS*—10 page Bulletin 3926 describes hermetic packaged "Versare" units. Tabulation of net rated capacity presented with charted cooler and condenser drops. Selection data, engineering specifications, dimensional and physical data correlated with drawings. *American-Standard Industrial Div., Detroit* 32.

▶ *PIPE COUPLINGS*—12 page booklet describes cast iron units for all sizes and classes of cast iron or asbestos-cement pipe. Special emphasis given on reducing and transition couplings. Specifications and design data included. *Smith-Blair, Inc.,* 535 *Railroad Ave., South San Francisco, Calif.*

▶ *PIPE THAWING*—eight page bulletin, EW-243 gives data on thawing frozen water pipes with low voltage electricity. Explains electric method, shows equipment, and gives instructions. Tables show amp and time required for thawing steel pipe, recommended cable sizes, and maximum amp loads of firm's arc welders used for thawing. *Hobart Brothers Co., Troy, O.*

▶ *PIVOTED MOTOR BASES*—with automatic tension control and take-up of belt with unvarying belt alignment described in Bulletin 5A. Includes selection chart based on all re-rated NEMA motor frames for belt drives. *Industrial Marketers, P.O. Box* 28, *Ferndale* 20, *Mich.*

▶ *PLASTIC WELDERS*—two page Bulletin 60-1 describes units for thermoplastics such as polyethylene, poly-

Can you understand this man's hunger for Tools?

Without them he's useless—a burden to himself and the earth. ■ With tools in his hands—a spade, a hoe, a trowel, a rake—he could raise food enough for his own family and perhaps other hungry villagers. ■ But for this man and countless others like him in Greece, in India, in Latin America and other desperately poor areas—the simplest steel implements are beyond reach. They cost too much. So millions of acres are barely scratched...with forked sticks or wooden ploughs...and two-thirds of the world's people still go to sleep hungry. ■ Will you help them till the fertile earth...through CARE? Wherever possible, CARE food distribution is coupled with a tools-for training program that enables men and women to become self-supporting. The need was never greater, the rewards never richer. ■ *Will you buy an extra tool*—to put into hands hungry for work, food, and dignity? ■ Send dollars to CARE, New York 16.

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Here is $________ for food ☐ tools ☐
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(PLEASE MAKE CHECKS PAYABLE TO CARE, INC.)
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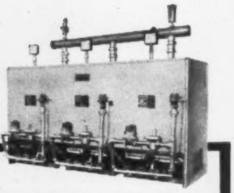
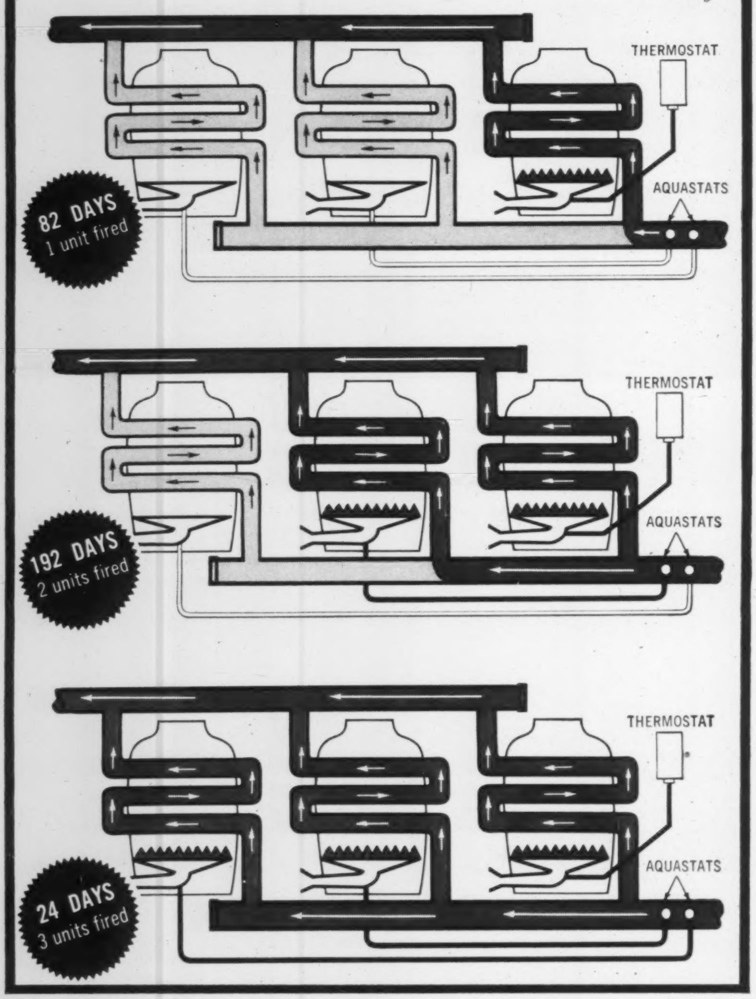
See How MULTI TEMP Saves Money on Big Gas Jobs





CUTS SHORT CYCLING, FUEL WASTE, INSTALLATION COSTS

Diagram shows how cast iron MULTI-TEMP Hot Water Heating Plants automatically adjust capacity to load — save fuel dollars! Sensing elements in return water header call in additional combustion units, one-by-one, as temperatures drop. The load distribution shown is typical of our northeastern region. Note: full capacity was required during only 3% of heating season, and a single unit could meet demand for over 25% of season. Set-up time is saved too — batteries do not require field rigging or joining of sections — come factory assembled with controls. Maintenance is easy on individual units without service interruptions. Capacities up to 3,600,000 BTU/hr., rated at 100# ASME working pressure. For space heating and volume water heating. *Write for catalog HY-F107 today!*

HYDROTHERM INC
DEPT. 13-AC, NORTHVALE, NEW JERSEY

FIRST IN HYDRONIC GAS HEAT

RECENT TRADE LITERATURE

Continued

propylene, rigid and plasticized PVC. Includes hand-welder and tacker, job welder, medium and high speed production welders, and a special all-purpose unit. *Kamlar Products Co., 932R Washington St., Norwood, Mass.*

▶ *PLUG VALVES*—four page bulletin, V-620 describes lubricated units for air conditioning and heating. Basic principle of unit, selection data, photos, drawings, and charts given. *Rockwell Mfg. Co., Meter and Valve Div., 400 N. Lexington Ave., Pittsburgh 8.*

▶ *PNEUMATIC SPRING AND DIAPHRAGM ACTUATORS*—four page Bulletin B-1020-7 describes firm's series "B-10 and B-20" in complete valve assemblies to customer specifications. Shows typical combinations including a butterfly, adjustable port, and burner valve. Complete specifications, operating characteristics, and dimensions given. *Conoflow Corp., 2100 Arch St., Philadelphia 3.*

▶ *PORTABLE DUCT*—four page brochure, "The Facts About Spiratube," gives specifications for firm's product. Construction and application data included. *Flexible Tubing Corp., Guilford 2, Conn.*

▶ *PORTABLE TOOLS*—72 page Catalog #61 describes air-powered and electric fasteners, drills, and other tools. Subjects are broken into categories and keyed to an index. Make request on company letterhead. *Buckeye Tools Corp., 5003 Springboro Pike, Dayton 1, O.*

▶ *PORTABLE VACUUM CLEANER*—four page bulletin describes unit for handling radioactive and toxic dusts. Design, maintenance procedure, tested efficiencies, and illustrated accessories and special modifications given. *Cambridge Filter Corp., 738 Erie Blvd., Syracuse 1, N.Y.*

RECENT TRADE LITERATURE
Continued

▶ *PRESSURE REDUCING VALVES*—two page catalog sheet describes units for use with steam, water, gas, and air to initial pressures of 500 psi. Diaphragm-operated, single-seated, spring-loaded bronze body valves have reduced pressure ranges of 50-225, 10-150, and 0-5 psi. *Atlas Valve Co., 280 South St., Newark 5, N.J.*

▶ *PRESSURE TRANSMITTER*—four page specification S 230-1 describes bellows differential unit for use in any flow or open or closed tank liquid level application to transmit readings from field locations. Available with concentric scale for local indication at point of measurement or as a non-indicator. *Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne and Windrim Aves., Philadelphia 44.*

▶ *PROTECTIVE COATINGS*—eight page Bulletin No. T-97-61 gives properties and specification data on nine "Bitumastic" products. Recommended coating given for various applications such as underground corrosion, water exposure, corrosive atmospheres, and chemical and mechanical destruction. *Koppers Co., Inc., Tar Products Div., Pittsburgh 19.*

▶ *PUMP SELECTOR*—pocket-sized guide in slide rule form. Accurate calculation of friction loss in a system given. Make request for (G2903) on company letterhead. *Worthington Corp., Harrison, N.J.*

▶ *RECORDERS, INDICATORS*—48 page Catalog C 15-la gives design features of firm's strip and circular chart recorders and precision instruments. What instrument is best and why, specifications, accuracies, and other selection data given. *Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne and Windrim Aves., Philadelphia 44.*

CHAMPION AIR MOVERS
Since 1875

Manufacturers of Forward Curve, Backward Curve, and Radial Blade Fans. All-welded steel construction or cast iron housed. Built for low and high pressure operation. Also, material handling fans and acid resisting units.

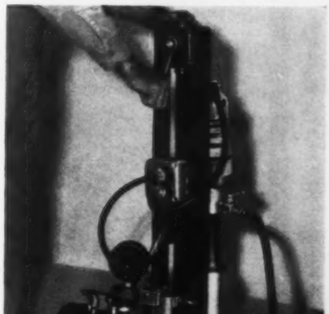
Sturdy-Efficient-Rugged
Prompt Deliveries

CHAMPION BLOWER & FORGE CO., INC.
LANCASTER, PA.

CUTTING POWER!

51 3-Inch Holes In One Day Through 4-Inch Concrete Floors!

A contractor drilling 5000 3-inch holes in a new office building finished *51 in one day, and once cut 21 in two hours!* Going through 3-4 inches of reinforced concrete with Longyear diamond bits took 1 to 1½ minutes, and Longyear diamond bit life was as high as 100 feet. The "305" drill was equipped with a new, compact vacuum hold-down unit, making set-up lightning-fast.



For more detailed information on application of Longyear drills, write Department 5A.

Longyear

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76 S. Eighth Street, Minneapolis 2, Minnesota
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Adv. 175A

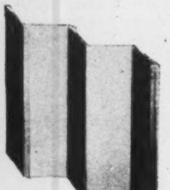
REDUCE COSTS!

SPECIFY

SOPLASCO PLASTIC Moisture ELIMINATOR BLADES

FOR INDUSTRIAL AIR CONDITIONING

Demand the best! Costs no more. Maintenance costs are negligible as the superior surface of SOPLASCO blades reduce to a minimum the accumulation of algae and lint. Cleaning is accomplished without blade removal.



Southern Plastics Co.

408 Pendleton St.
Columbia, S. C.

For further information write, wire, or phone SOPLASCO AIR PRODUCTS DEPT.

▶ *ROOF VENTILATORS*—bulletin DB3-300 describes vertical exhaust unit for industrial and commercial use. Gives engineering and specifications data, performance charts, sound level classification, gages of steel, dimensions, and construction features. *Ilg Electric Ventilating Co., 2850 N. Pulaski Rd., Chicago 41.*

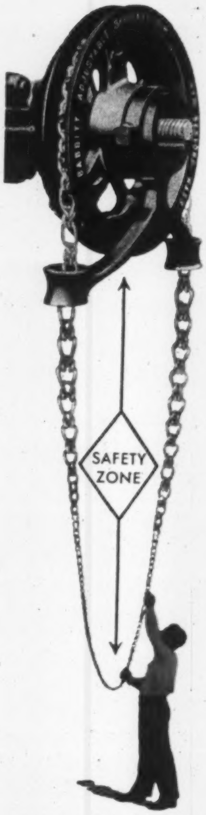
▶ *RUBBER PIPE*—four page Bulletin 866 describes "SoundZorber" wire-reinforced rubber pipe. Sizes 1 to 3 in. available with either metal coupling fittings or with integral solid molded rubber flanges. Sizes 4 to 12 in. available with integral, solid, full-faced rubber flanges with either 150 or 250 lb drilling steel flanges embedded in the molded rubber flanges. Designed to eliminate noise and vibration in air conditioning and heating systems. *General Rubber Corp., 65 Summit St., Tenafly, N.J.*

▶ *SAMPLING OF DUST IN DUCTS*—two page Manual #15 discusses special problems encountered when sampling in closed systems. Methods to obtain accurate samples included. *Gelman Instrument Co., Chelsea, Mich.*

▶ *SENSING DEVICES*—for detection and control of process variables. Element in "W-I-T" uses a sealed, flexible tube containing a spring wire to transmit motion through a pressure-tight wall. Two page Bulletin RI-1825. (Supplement D) illustrates potential applications such as measurement of level, temperature, flow, and pressure. *Yarnall-Waring Co., Chestnut Hill, Philadelphia 18.*

▶ *SOUND ABSORBERS*—four page Bulletin B-13 is a condensed design manual on methods of controlling noise generated by gas-flow devices. Acoustic and aerodynamic characteristics of firm's "Silentflow" units described. Design charts provide data for proper type and optimum size selection. *Silence, Inc., P.O. Box 21, Farmingdale, N.Y.*

Babbitt
Adjustable
SPROCKET RIM
with Chain Guide
Changes that Danger Zone to a
SAFETY ZONE



—enables you to
ADD PLANT AREA

If re-aligning equipment will yield more working space, better production, lower costs—do it now. Save all space wasted for placing ladders to reach overhead valves. At the same time, convert Danger Zones to Safety Zones. Equip every overhead valve wheel in your plant with Babbitt Adjustable Sprocket Rims with Chain Guides.

- They simplify pipe layout.
- They fit any size valve wheel.
- They are easy to install and operate.
- They operate any valve from the floor.
- They save time and money.
- The first cost is the only cost (no maintenance).
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- A hot-galvanized rust proof chain is available for all sizes.

Babbitt Adjustable Sprocket Rims with Chain Guide are carried in stock by most mill supply houses. Just phone your mill supply salesman or contact us direct.

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Babbitt
STEAM SPECIALTY CO.
8 BABBITT SQUARE, NEW BEDFORD, MASS., U.S.A.

RECENT TRADE LITERATURE

Continued

▶ *SOUND CONTROL*—eight page booklet F-10180 discusses sound slide film entitled "Making Sound Behave." Facts about air distribution sound levels given. Each slide in film is illustrated in booklet and accompanied by a description. *Barber-Colman Co.,* 1300 *Rock St., Rockford, Ill.*

▶ *STEEL PIPE*—eight page brochure describes firm's copper-nickel, low-alloy steel pipe available in continuous weld, seamless standard, and extra strong pipe sizes. Charts and graphs show unit's resistance to atmospheric, soil, and chemical corrosion as compared with pipe of different materials. Application photos included. *The Youngstown Sheet and Tube Co., P.O. Box* 900, *Youngstown, O.*

▶ *SUBMERSIBLE PUMPS*—four page bulletin lists physical dimensions, capacities, and electrical data for all units in firm's 1961 line in addition to providing a thumbnail sketch for each. *Kenco Pump Div., The American Crucible Products Co.,* 1305 *Oberlin Ave., Lorain, O.*

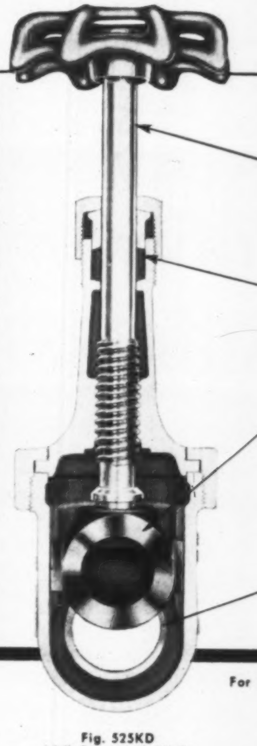
▶ *THERMOSTATS*—four page Bulletin, Unit R-1691, describes firm's "D'LUXline and PushButton" room units. Features include sealed mercury contacts, heat anticipation, and bimetal temperature sensing elements. Includes catalog sheet with specifications and other information. *White-Rodgers Co.,* 1209 *Cass Ave., St. Louis* 6.

▶ *TUBE FITTINGS*—catalog with illustrated specification tables covers tapered pipe, S.A.E. straight thread fittings, and tube reducing adapters utilizing O-ring seals. Also covered are three-piece 37 deg flare tube fittings in tapered pipe and S.A.E. straight thread and other equipment. *The Lenz Co.,* 3301 *Klepinger Rd., Dayton* 1, *O.*

Outstanding Valve performance with

KENNEDIZED DISCS

an entirely new development in bronze gate valve construction that extends service life beyond comparison . . .



PROVEN BY USE!

KENALLOY STEM . . .

Exclusive KENNEDY alloy that prevents dezincification and corrosion and provides smooth, non-galling threads and bearing surfaces. In a rugged use test, this stem withstood a mechanical loading of 18 foot-pounds closing torque and after 25,000 cycles was like new!

PACKING . . .

New type packing made of molded graphite asbestos with a Buna "N" binder required no replacement during or after 25,000 cycles.

KENNEDIZED DISC . . .

In punishing use tests, the super mirror finish of the KENNEDIZED disc actually improved with wear! Disc showed no galling or other wear marks after 25,000 cycles at 150 lbs. saturated steam pressure. This remarkable wear resistance is combined with an extremely low coefficient of friction, smooth sliding properties, excellent anti-seizure characteristics and corrosion and galling resistance. Tests and in-use results prove these discs set a new and unmatched high standard in valve performance.

SEAT . . .

Due to the low coefficient of friction and smooth sliding properties, the action of the KENNEDIZED disc actually improved the finish on the seat. Here, again, no galling was found on the seat after 25,000 cycles.

For the complete KENNEDIZED DISC story, write for Bulletin 574.

Fig. 525KD
125-Pound S.W.P.
Bronze Gate Valve.

KENNEDIZED DISCS NOW AVAILABLE IN THESE KENNEDY VALVES . . .

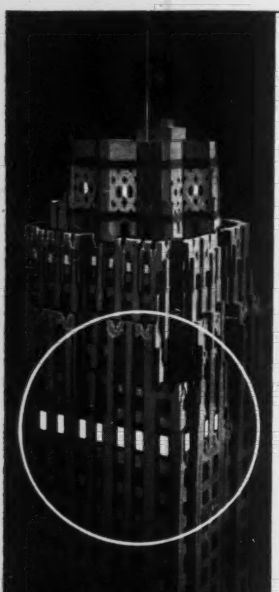
FIG. 427KD
125-Pound S.W.P. Bronze Gate Valve—Non-Rising Stem, Inside Screw, KENNEDIZED Wedge Disc.
WORKING PRESSURES: Saturated Steam, 125 lbs.; W.O.G., Non-Shock, 200 lbs.

Fig. 525KD
125-Pound S.W.P. Bronze Gate Valve—Union Bonnet, Rising Stem, Inside Screw; KENNEDIZED Wedge Disc.
WORKING PRESSURES: Saturated Steam, 125 lbs., W.O.G., Non-Shock, 200 lbs.

Fig. 78KD
200-Pound S.W.P. 550° F. Bronze Gate Valve—Union Bonnet: ¼"-2"; Bolted Bonnet: 2½"-3"; Rising Stem, Inside Screw; KENNEDIZED Wedge Disc.
WORKING PRESSURES: Steam at 550° F., 200 lbs.; W.O.G., Non-Shock, 400 lbs.

Fig. 518KD
300-Pound S.W.P. 550° F. Bronze Gate Valve—Union Bonnet: ¼"-2"; Bolted Bonnet: 2½"-3"; Rising Stem, Inside Screw; KENNEDIZED Wedge Disc.
WORKING PRESSURES: Steam at 550° F., 300 lbs.; W.O.G., Non-Shock, 600 lbs.

KENNEDY VALVE MFG. CO.
ELMIRA, NEW YORK
• OFFICE AND WAREHOUSES IN PRINCIPAL CITIES
DUCTILE IRON VALVES • CAST IRON VALVES • BRONZE VALVES • INDICATOR POSTS • FIRE HYDRANTS



Working
behind the scenes
to keep the
Air Moving Industry
moving forward

AIR MOVING & CONDITIONING ASSOCIATION INC.
AMCA

AMCA announces . . .

a New Standard Code

FOR TESTING THE PERFORMANCE OF ALL AIR MOVING DEVICES

BULLETIN 210

AMCA's new Bulletin 210 supersedes Bulletin 110 which has long served as the industry standard for testing and rating commercial and industrial fans. Incorporating the latest methods for testing all air moving devices, this new, broader and improved code represents many years of intensive study and comparative testing in cooperation with leading research organizations.

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AMCA
AMCA STANDARD TEST CODE for Air Moving Devices
AIR MOVING AND CONDITIONING ASSOCIATION INC.

Please send Bulletin 210
(Single copies free. A nominal charge is made on quantity shipments.)

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Company____________________
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AIR MOVING AND CONDITIONING ASSOCIATION, INC.
2159 Guardian Building Detroit 26, Michigan

RECENT TRADE LITERATURE

Continued

▶ *UNITARY AIR CONDITIONERS*—four page bulletin, B-1100-1F, describes summer rotary evaporative cooling unit. Freatures bronze disc screen rotor, sealed electric gear motor drive, and automatic external flush valve. Four sizes from 2500 to 8000 cfm; packaged units available in sizes from 2500 to 1600 cfm. *Farr Co., P.O. Box* 90187, *Airport Station, Los Angeles* 45.

▶ *VENTILATION AND AIR PURIFICATION EQUIPMENT*—for civil defense protective shelters described in 12 page bulletin. Gives dangers encountered in attack, air requirements, and specifications for shelters, *Flanders Filters, Inc., P.O. Box* 718, *Riverhead, L.I., N.Y.*

▶ *VENTILATORS*—for fire protection described in eight page Bulletin FY-R59. Gives fire hazard rating charts which show appropriate number of vents required for a given area. Proper sizing and spacing of units also given. *Penn Ventilator Co., Goodman above Allegheny Ave., Philadelphia* 40.

▶ *WATER HEATERS*—hard cover manual gives sizing procedures for all products in field of commercial units. Lists American Gas Association Laboratory approvals, water temperature equivalents, a comparison of direct-fired and indirect-fired systems and their operating efficiencies, and National Sanitation Foundation Code requirements. *Republic-Transcon Industries, Inc., Beverly Hills, Calif.*

▶ *WELDED STEEL TUBING WEIGHT COMPUTATIONS*—16 page brochure gives dimensions and weight per ft for round mechanical tubing up to 10 in. square and rectangular tubing up to 5 in., and pressure tubing up to 5 in. *Electricweld Tube Div., Jones & Laughlin Steel Corp.*, 3 *Gateway Center, Pittsburgh* 30.

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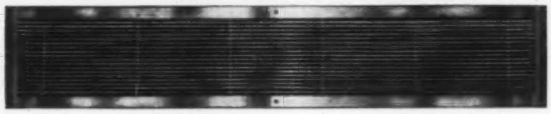

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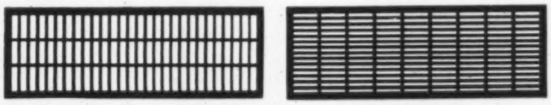
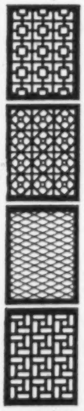
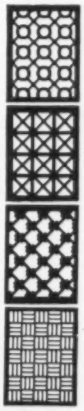
. . . meet the current demand for a very strong bar-type grille which provides more than the usual percentage of open area and is suitable, in general appearance, for use with practically any modern style of interior design. Specified by leading engineers and architects for Schools, Colleges, Hospitals, Ocean Liners, Sports Arenas, etc. Custom Built (no standard sizes) in any specified rectangular size or shape — All Steel or All Aluminum — for either direct or deflected air flow. Write for Bulletin 43.



DIAMOND ARCHITECTURAL GRILLES



. . . are stamped from Steel, Aluminum, Bronze or any other commercial metal; in a wide variety of artistic designs, in any desired thickness up to one-quarter inch, with correspondingly LARGE unit openings. Widely used, for nearly half a century, in America's finest buildings, they have proved practically indestructible — standing up for years against any probable amount of rough usage. Bulletin 41 illustrates and describes a number of popular designs and applications. Catalog 36 (100 pages) contains actual-size illustrations of ALL Diamond Grille designs, together with complete working data. Write for either or both — no charge or obligation.



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Box 41 WYOMING PENNA.
(Wilkes-Barre Area)

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USAIRCO

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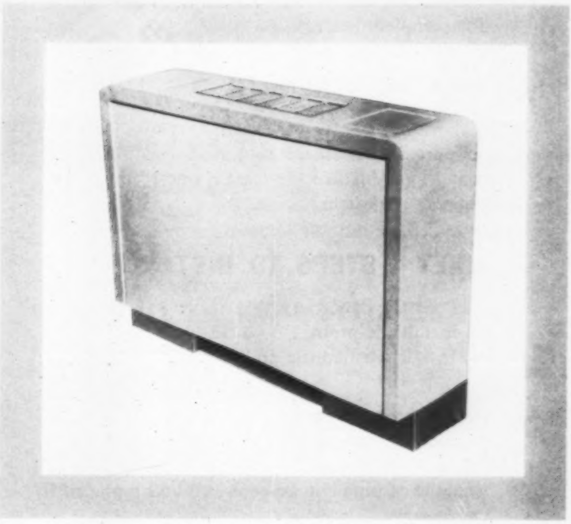
Individual Room Heating and Cooling Units

"Quiet Beyond Belief"



Supplied for central water system
Installed without duct work

A practical, fast application for existing buildings

Extraordinary economy in new construction

Highly recommended for hotels, hospitals, motels, office buildings, schools, apartments, public institutions

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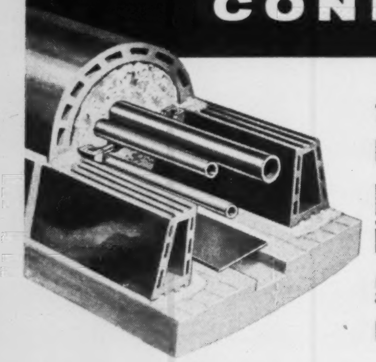
Write For Product Bulletin No. 96A

United States Air Conditioning Corporation
40 years experience in air conditioning equipment
Delaware, Ohio



Therm-O-Tile®
CONDUIT

for underground piping in normal ground conditions

★ **THERMALLY EFFICIENT**

Actual field test proves thermal efficiency. Write for complete test results.

★ **LASTING STRENGTH**

Laboratory tests prove Therm-O-Tile is stronger in pounds per linear foot than extra strength clay pipe. Vitrified tile used is one of most permanent materials known.

★ **ONLY 4 STEPS TO INSTALL**

1. Pour the concrete slab.
2. Install the piping. **3.** Insulate.
4. Install vitrified tile and coat mortar joints.

★ **EASY TO REPAIR**

Pipe leaks are easy to locate and repair. Full lengths of pipe can be removed and replaced if necessary.

★ **DOUBLE ECONOMY**

Therm-O-Tile costs less to install and less to maintain as piping failures can be located and repaired.

SEND FOR COMPLETE
ENGINEERING CATALOG

H. W. Porter Co., Inc.
Newark 12, New Jersey
or Subsidiary **Reid Hayden, Inc.**
BALTIMORE • CHARLOTTE • RICHMOND

WE HEAR THAT . . .

▶ *CARL R. FLODIN, CONSULTANT*, has opened an office for air pollution control engineering in the processing industries at 2744 Monterey Rd., San Marino, Calif.

▶ *BOUILLON, GRIFFITH, CHRISTOFFERSON & SCHAIRER, CONSULTING ENGINEERS,* have moved to 505 Washington Building, Seattle, Wash.

▶ *REPUBLIC STEEL CORP.* has licensed *PIPELINE SERVICE CORP.* to use its "X-Tru-Coat" process for coating steel.

▶ The marketing activities of *BASTIAN-MORLEY CO.* and its subsidiary, *H. C. LITTLE BURNER CO., INC.*, have been combined as of December 15, 1960.

▶ *DRYOMATIC CORP.* has moved into a new plant at 715 N. Fayette St., Alexandria, Va. The structure comprises about 9000 sq ft of manufacturing area and 3000 sq ft of office space, doubling the space in its old facilities.

▶ *MARSH INSTRUMENT CO., DIV. OF COLORADO OIL AND GAS CORP.* has completed construction on warehousing and distributing facilities at Fort Lee, N.J. Full scale operation is under way serving the eastern seaboard requirements for firm's products.

▶ *JOHN M. FRANK*, chairman of the board of *ILG ELECTRIC VENTILATING CO.* has been honored by his fellow executives on the 50th anniversary of his joining the company.

▶ *DORSEY GAGE CO., INC.* recently completed an addition that doubled its previous space.

▶ *SCHURS BURNER & EQUIPMENT INC.* is the new name of the former Schurs Oil Burner Co. The firm has moved into larger manufacturing facilities at 8956 S. Atlantic Ave., South Gate, Calif.

▶ *CONTROLS CO. OF AMERICA* has organized a corporate research and development staff to carry out basic and applied research projects for the firm's various divisions.

WE HEAR THAT

Continued

▶ *ARMCO STEEL CORP.* will spend $2,500,000 to consolidate its spiral welded pipe manufacturing operations in a plant in Middletown, O. Four new buildings with 207,000 sq ft of floor space will be constructed.

▶ *ROCHESTER MFG. CO., INC.* has been acquired by the *AMERICAN RADIATOR & STANDARD SANITARY CORP.* The firm will be operated as a part of the Detroit Controls Div. of American Standard.

▶ *HEAT CONTROLLER, INC.* recently completed an addition which adds 25 percent more space to its facilities.

▶ *SONOCO PRODUCTS CO.* recently dedicated its new Research Laboratories Building in memory of Dr. James Edward Mills, the firm's first chemist and research director. The new building will more than triple the laboratory's space.

▶ *JOHN A. HOLBROOK*, a member of HPAC's Board of Consulting and Contributing Editors, and formerly administrative engineer, Presbyterian-St. Luke's Hospital in Chicago, has joined the staff of *A. T. KEARNEY & CO., MANAGEMENT CONSULTANTS*, as hospital consultant.

▶ *HI-PRESS AIR CONDITIONING OF AMERICA, INC.* has acquired the assets of the *DRAYER-HANSON DIV.* of the *CRANE CO.*

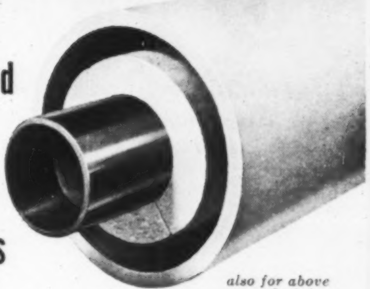
▶ *APRIL SHOWERS, INC.* has been acquired by *SWARTWOUT FABRICATORS, INC.* The acquired firm manufactures roof sprinkler cooling systems.

▶ *ARMCO STEEL CORP.* has adopted a new identifying trademark and standardization of its corporate signature. The new design is a modernization of the firm's traditional inverted triangle.

▶ A combination pipe mill which will make either continuous weld or electric weld steel pipe will be installed at the Ambridge, Pa. plant of *THE NATIONAL SUPPLY CO.* Due for completion in 1962, the unit will also be used to stretch-reduce seamless pipe to smaller sizes.

PORTER-HAYDEN
CONDUIT

for
underground
piping
in severe
water areas



also for above ground piping

★ **COMPLETELY NON-CORROSIVE**

The asbestos—cement outer casing is tough, durable, strong and highly resistant to mild acids and strong alkalies. Designed specifically for use in wet areas, it insures "piping permanence" in wet earth.

★ **IMMUNE TO ELECTROLYSIS**

Since the outer casing, alignment guides and end seal discs are all non-metallic, Porter-Hayden conduit is immune to the corrosive effects of electrolysis.

★ **FULL THERMAL EFFICIENCY**

Any desired degree of thermal efficiency can be attained, as conduit permits use of proper type and thickness of insulation.

★ **EASY TO INSTALL**

"Split-Coupling" feature plus Porter-Hayden Bond speeds assembly of prefabricated conduit sections. Pipe can be rotated through the anchors and guides which reduces position welding.

★ **WATERTIGHT**

Installation may be air tested at 15 psi air pressure to check for watertightness.

APPROVED AS TYPE "A" CONDUIT

H. W. Porter Co., Inc.
Newark 12, New Jersey
or Subsidiary **Reid Hayden, Inc.**
BALTIMORE • CHARLOTTE • RICHMOND
sales representatives for
PORTER-HAYDEN CONDUIT COMPANY, INC.
NEWARK 12, NEW JERSEY

WE HEAR THAT

Continued

▶ *CONSOLIDATED PIPE CO. OF AMERICA* has purchased the pipe fitting division of *GULF STREAM PLASTICS INC.* Equipment and inventory have been moved to the firm's Akron, O. plant where production is now under way.

▶ *FISHER GOVERNOR CO.* will begin early this year to manufacture its pneumatic and electronic automatic control equipment in Mexico under the corporate name of *CONTROLES AUTOMATICOS, S. A.* The firm has also purchased the assets of the *E. HERBERT VICKERY CO.*, manufacturers of ball type valves.

▶ The assets of *SMITH & MACGEORGE* have been acquired by *SCHAEVITZ ENGINEERING.* Former partner of the acqired firm, William D. Macgeorge, has been appointed vice president of engineering.

▶ *GENERAL AIR PRODUCTS CORP.* has moved into a 50,000 sq ft building in Sterling, N.J. doubling the space in its former facilities.

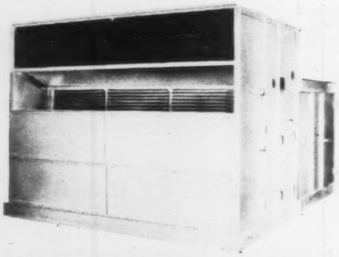
▶ *FARRIS ENGINEERING CORP.* and its affiliated companies have formed a new affiliate, *FARRIS INDUSTRIES CANADA LTD.* in Longueuil, Quebec. Frederick S. Rich is General Manager.

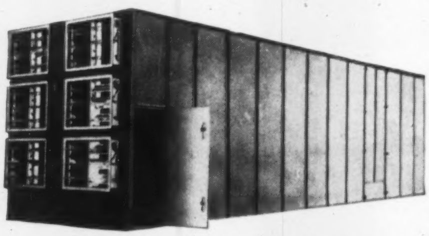
Two additions to *THE TRANE CO.* facilities in La Crosse, Wis. have been made. One addition is a 52,500 sq ft extension of a warehouse and the other is a 40,000 sq ft addition to the firm's manufacturing facilities. Completion is scheduled for the spring of 1962. Total cost will be about $1.4 million.

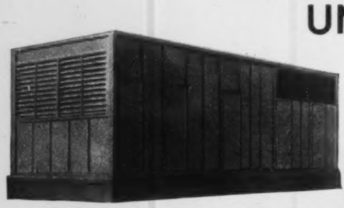
MODINE MFG. CO. has purchased land in McHenry County, Ill., for anticipated future manufacturing expansion. Preliminary grading has begun,

COOLING TOWER INSTITUTE has formed an Associate Membership Section of the CTI to be composed of owners and operators of industrial water cooling towers.

JOSEPH T. RYERSON & SON, INC. has added Reynolds aluminum to its steel service center stocks at Cincinnati. To accommodate the stocks, a 32 × 140 ft addition has been built.


DOUBLE DUCT UNITS


MULTIPLE ZONE UNITS


ARTICULATED AIR CONDITIONING UNITS

AIR CONDITIONING EQUIPMENT

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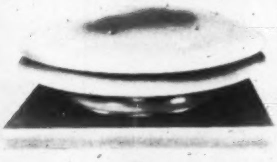
SALES REPRESENTATIVES IN PRINCIPAL CITIES

No Need to Look Further...

①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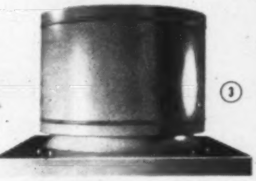
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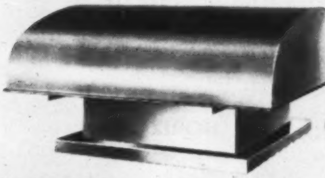
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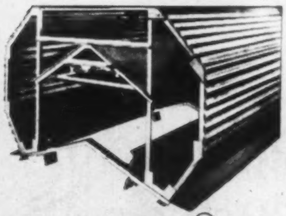
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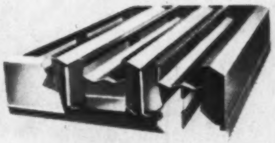
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ELECTRIC
HOT WATER HEAT
TO 2,500,000 B.T.U. OUTPUT

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PRECISION
ELECTRIC HOT WATER HEATING BOILER

COMPLETE UNIT READY FOR INSTALLATION
with circulation hot water system and water chiller for year-round air conditioning.

CONVERSION EASILY ACCOMPLISHED
where other type fuels now used. Suited for home, churches, motels, apartments, hotels, hospitals, commercial buildings, swimming pools, snow melting and domestic hot water for large users. Temperature range — 60 to 250 degrees. Equipped with Sequence and Proportional Controls when desired.

- **Every unit tested and inspected 40,948 to 2,500,000 B.T.U. Output.**
- **All Boilers meet the requirements of the ASME Boiler and Pressure Vessel Code. Natl. Board approved.**

No chimney! No odors! No flame! No ducts! No noise!

Write for complete specifications and prices

PRECISION parts corporation
400-HPA NORTH FIRST STREET
NASHVILLE 7, TENNESSEE

WHO'S WHAT . . .

(New personnel, promotions)

▸ *ILLINOIS MANUFACTURERS ASSOCIATION* — H. C. Mueller, president of Power Regulator Co., president.

▸ *INSTITUTE OF HEATING AND AIR CONDITIONING INDUSTRIES, INC.* — Arthur Horn, sales manager of the heating and air conditioning division of Payne-Day & Night Mfg. Co., president; James Williams, Permanent Pipe Products, vice president; and Dale Davenport, Granada Heating and Air Conditioning, secretary-treasurer.

▸ *UNITED ENGINEERING TRUSTEES, INC.* — Willis F. Thompson, executive vice president of Westcott and Mapes, Inc., and a former vice president of The American Society of Mechanical Engineers, president.

▸ *H. W. TUTTLE & CO.* — Fritz Goettner, in charge of new product development.

▸ *NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION* — A. D. R. Fraser, president of Rome Cable Div., Aluminum Co. of America, president; W. R. Persons, president of The Emerson Electric Manufacturing Co., vice president; and A. E. Pringle, II, president of The Pringle Electrical Manufacturing Co., treasurer.

▸ *ENGINEERS JOINT COUNCIL* — James N. Landis, vice president of Bechtel Corp., president; and George E. Holbrook, vice president of E. I. du Pont de Nemours & Co., vice president.

▸ *ACME STEEL CO.* — Harry J. Cooper, director of public relations.

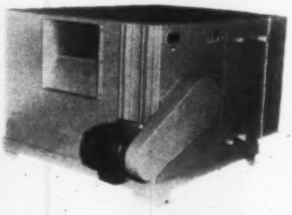
▸ *CHICAGO PUMP CO.* — Leonard Nechine, assistant manager.

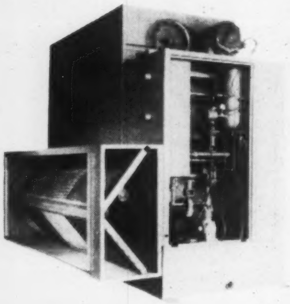
▸ *CORNING GLASS WORKS* — Robert C. Reese, supervisor of product engineering for plant equipment products.

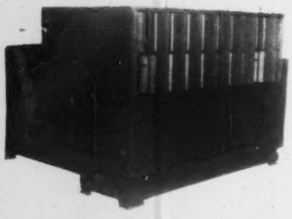
▸ *MINNEAPOLIS-HONEYWELL REGULATOR CO.* — Nilsson S. Bassett, group marketing liaison with government agencies for firm's Federal Services Group.

▸ *THE RITTLING CORP.* — Robert J. Carter, vice president, engineering.

COMFORT Master
AIR CONDITIONING EQUIPMENT


SINGLE ZONE UNITS
HORIZONTAL — VERTICAL


LABORATORY
TEMPERATURE
HUMIDITY UNIT

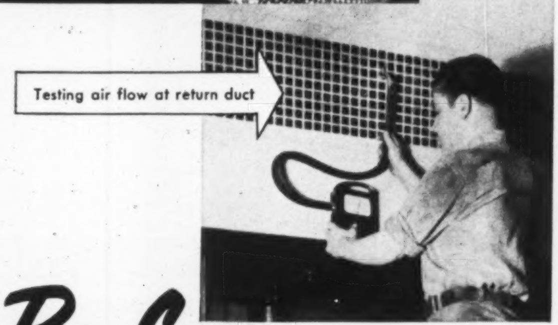

MULTICONE UNITS
COMPLETE RANGE

Special Equipment
. . . MADE TO ORDER

ACI

AIR CONDITIONING INDUSTRIES, INC.
P.O. Box 6602 Houston 5, Texas

Testing air flow at outlets


Testing air flow at return duct

Be Sure the first time in balancing air flow systems

The Alnor Velometer®

gives a quick accurate check of air movement at outlets, returns, plenum chambers, static pressure in ducts, friction loss at ells and deflectors.

Readings are made directly in f.p.m. on the Velometer dial. So sensitive, readings as low as 20 f.p.m. can be made. The triple range scale registers up to 3000 f.p.m. and 6000 f.p.m.

Velometer Set No. 3G

Recommended for the air conditioning, heating and ventilating contractor. Consists of the Velometer with rugged carrying case, angle supply jet, suction (return) jet, static pressure jet, Price f.o.b. Chicago $194.

Velometer Jr.

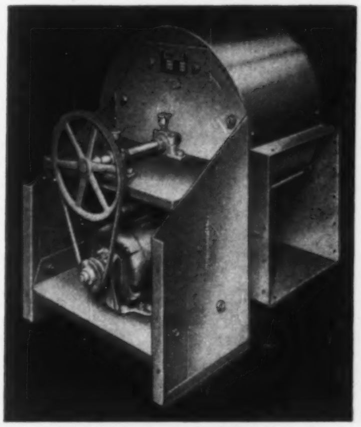
For quick simple checking at outlets where attachments are not required. A compact instrument only 4" x 3" x 1½". Capacity ranges

0—200 f.p.m. to 800 f.p.m.
0—400 f.p.m. to 1600 f.p.m.
0—500 f.p.m. to 2500 f.p.m.

Price, with genuine leather carrying case, $44.00 f.o.b. Chicago. All models carried in stock for immediate delivery.

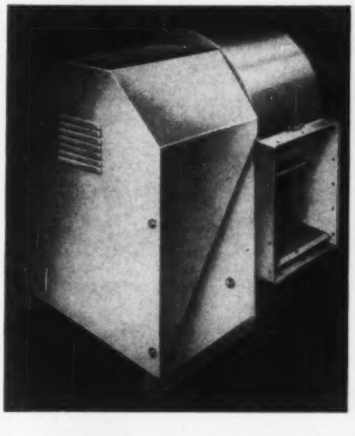
Alnor INSTRUMENTS

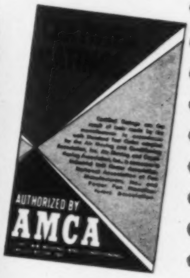
ALNOR INSTRUMENT CO.
Division of
Illinois Testing Laboratories, Inc.
Rm. 513, 420 N. LaSalle St., Chicago 10, Ill.



Aladdin
AIR HANDLING EQUIPMENT

UTILITY SETS





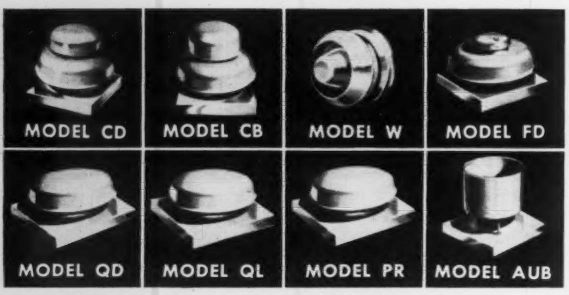
TEN SIZES • COMPACT • BELT DRIVEN
SELF CONTAINED • QUIET OPERATING

ALADDIN Belt-Driven Utility Sets are extremely quiet in operation. Designed for general ventilation, they occupy a minimum of space, handling large volumes of air at low noise levels. They are ruggedly built and are ideally suited for roof installation . . . when furnished with weatherproof cover they require no further protection against the weather.

ALADDIN Utility Sets are available with both forward curved or backwardly inclined blade wheels.

Write for complete data 2

ALADDIN HEATING CORPORATION
1111 WEST AVENUE 137 • SAN LEANDRO, CALIFORNIA



how to design for lower costs . . . . . . without sacrificing quality

Cook ALL ALUMINUM VENTILATORS

. . . . . THE ONLY VENTILATOR WITH 5 YEAR WARRANTY OFFERS THESE COST CUTTING FEATURES

REDUCE ROOF LOAD

Lightweight All Aluminum construction permits use of lighter roof supporting members. Important in large installations.

ELIMINATE SERVICE CALLS

Fine construction—efficient design assures proper performance without tinkering. Install it—forget it.

CUT INSTALLATION TIME

Designed for simple installation, Cook Ventilators save time and money.

GUARANTEE SATISFACTION

Corrosion resistant Aluminum construction cuts maintenance to the bone. Design and construction assure top performance—long trouble-free life.

You'll find a Cook Ventilator that comes closest to meeting your specific requirement in the complete Cook line. Specifications on all products are included in our new catalog. Send for your copy today!
See it also in Sweets Architectural File.

See us at the Ventilation Show in Chicago . . . Booth 644

Cook ALL ALUMINUM VENTILATORS
THE LOREN COOK COMPANY
BEREA, OHIO
MEMBER AMCA

WHO'S WHAT

Continued

▶ *SONOCO PRODUCTS CO.* — John A. Reagan, Jr., public relations manager.

▶ *UNION CARBIDE CHEMICALS CO.* — E. E. Husted, manager, fluorocarbons marketing; and Charles F. Gray, sales manager.

▶ *BORG-WARNER CORP.* — Robert L. Myers, associate director in charge of chemistry and materials of the Roy C. Ingersoll Research Center.

▶ *GREEN ASSOCIATES, CONSULTING ENGINEERS* — Edwin Bock, chief mechanical-electrical engineer.

▶ *THE TRANE CO.* — Clyde A. Benjamin, industrial engineer.

▶ *DORSEY GAGE CO., INC.* — Allen Linderholm, in charge of engineering, research, and development.

▶ *NORMAN PRODUCTS CO.* — James J. Maxwell, industrial engineer, engineering staff.

▶ *AIR-CONDITIONING AND REFRIGERATION INSTITUTE* — R. K. Serfass, manager of Westinghouse Electric Corp.'s Air-Conditioning Div., president.

▶ *BRYANT MFG. CO.* — Andrew L. Schuyler, boiler product manager.

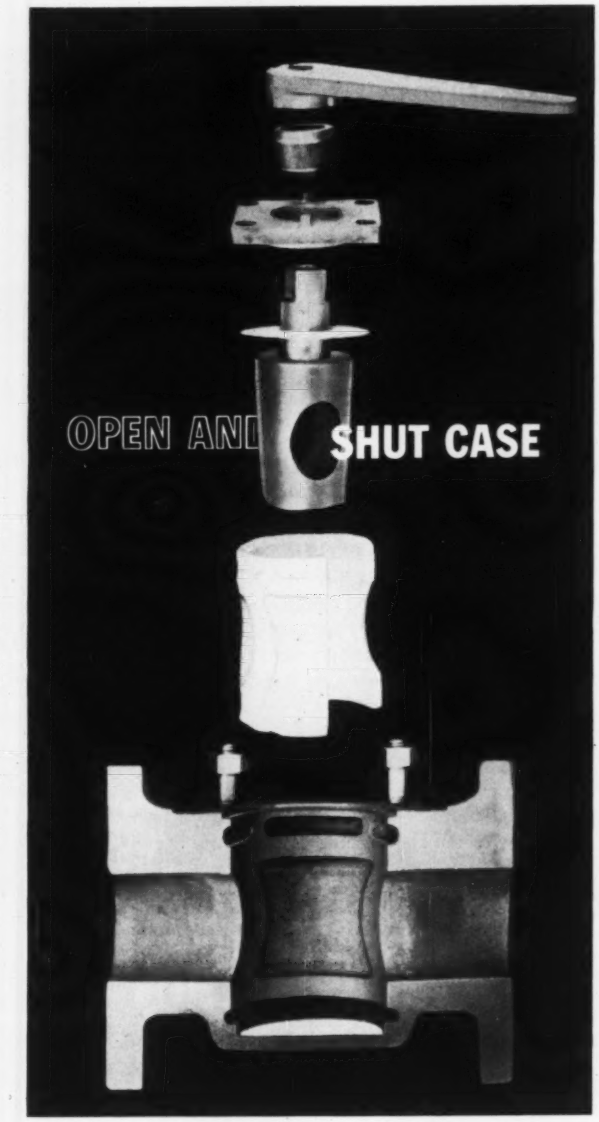
▶ *WORTHINGTON CORP.* — Donald C. Power, chairman of the board and chief executive officer of General Telephone and Electronics Corp., member, board of directors; and Frank J. Nunlist, vice president of operations, member, board of directors.

▶ *JOHN WOOD CO.* — John von Bergen, director of industrial sales, Air Pollution Control Div.

▶ *STREATOR CLAY PIPE CO.* — Ray G. Rinehart, vice president and assistant general manager.

▶ *THE F. E. MYERS & BRO. CO.* — J. F. Simmons, managing director, assistant treasurer, member, board of directors, Canadian subsidiary; and William J. Barnes, general sales manager.

▶ *YORK-SHIPLEY, INC.* — Lavern H. Brenneman, president and general manager.



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Leakproof sealing without maintenance in ON-OFF service makes an open and shut case for specifying Continental's TUFLINE non-lubricated plug valves. ■ For the facts of the case, examine closely the special high pressure sealing ribs and carefully sculptured body bore configuration. This, combined with the specially tempered pure Teflon* sleeve and tapered plug, is where Tufline valves pay off . . . in bubble-tight sealing without plug adjustment even under fluctuating temperature conditions. ■ For complete information on Tufline valves ¼" through 10", 150# and 300# class, 2-way through 5-way, or jacketed, furnished in a wide range of metals for services from light hard-to-hold gases to heavy corrosive slurries, temperatures –150° F. to + 400° F., high vacuum to 615 psi (depending on temperature), write Continental Mfg. Co., 230 Park Ave., New York 17, N.Y. *Registered trademark of E. I. Dupont de Nemours & Co., Inc.

TUFLINE PLUG VALVES

CONTINENTAL MANUFACTURING COMPANY • CINCINNATI 42, OHIO

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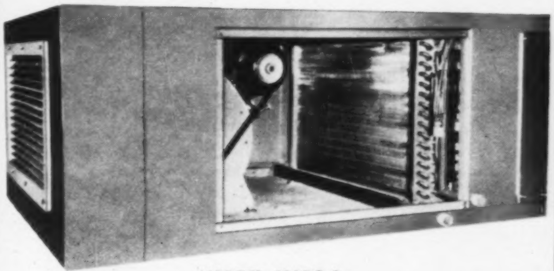

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Air Handling Units in both VERTICAL and HORIZONTAL Models

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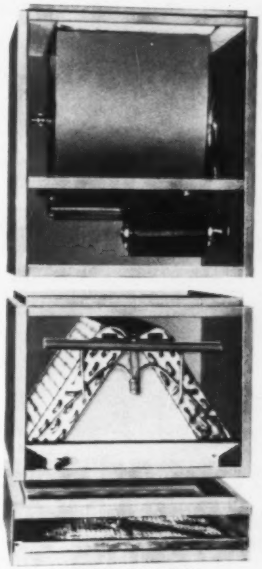

MODEL MABC-5

Horizontal Units in 2,- 3,- 4,- 5,- 7½, and 10-Ton Models. Vertical Units in 2,- 3,- 4,- and 5-Ton Models.

Magic-Aire Division

UNITED ELECTRIC CO.

Wichita Falls, Texas

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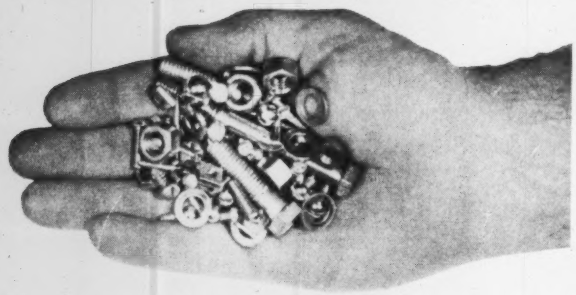
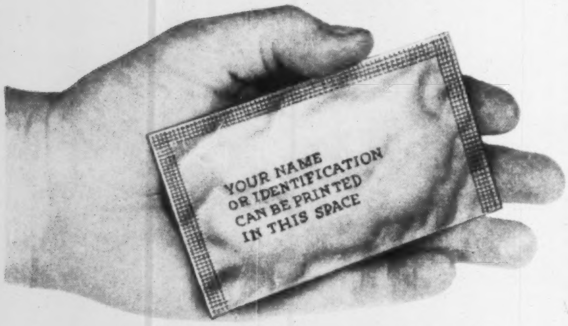


INTO THIS–



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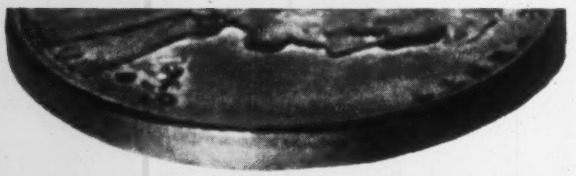

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Here is the ideal method to have fasteners packaged economically, saving time and errors. Get your fasteners packaged and supplied with a one-stop service.

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WHO'S WHAT

Continued

- *RECOLD CORP.* — Sherman Singer, sales manager for air conditioning products.

- *GENERAL ELECTRIC CO.* — Marshall Anderson, manager of manufacturing, general purpose control department.

- *GENERAL PRODUCTS CO.* — J. E. Rowell, director of sales.

- *FOXBORO CO.* — C. Schwarzler, vice president of marketing.

- *WOLVERINE TUBE, DIV. OF CALUMET & HECLA, INC.* — A. E. Nash, director of operations.

- *PENTRON ELECTRONICS CORP.* — Irving Rossman, president; and Theodore Rossman, chairman.

- *OHIO FURNACE CO.* — Dan Graves, product service manager.

- *REED MFG. CO.* — J. E. Baughman, general sales manager.

- *MODINE MFG. CO.* — R. L. Hagensick, chief engineer of the heating and air conditioning division.

- *IRON FIREMAN MFG. CO.* — Pierce V. Burke, sales manager for Timken Silent Automatic Products Div.

- *ALUMINUM CO. OF AMERICA* — William R. Butler, manager development divisions.

- *SCHAEVITZ ENGINEERING* — Louis D'Angelo, engineering projects administrator; Edward E. Williams, manager of the design and development section; and Andrew B. Young, member, board of directors.

- *ALLIED CHEMICAL CORP.* — Frederick A. Menkes, superintendent, General Chemical Div., Elizabeth, N.J.

- *GRANT WILSON, INC.* — A. F. Schmidt, sales manager.

- *FEDDERS CORP.* — Lawrence S. Levenson, public relations director.

- *AMERICAN-STANDARD INDUSTRIAL DIV.* — J. P. Soule, product manager; and Emil F. Peslar, vice president, manufacturing.

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Both Humidifier And Vaporizer In One Single Unit

HUMIDITY THE WAY NATURE MAKES IT

NO COOL MIST — NO WET SPOTS — NO CONDENSATION

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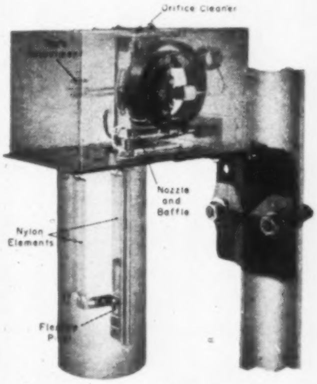

Phantom View of Room Model

Simple. A non-indicating, pneumatic, motion-balance transmitter, the No. 207T produces an air output pressure proportional to the relative humidity around the sensing elements, permitting a direct reading in the receiving instrument.

Easy to adjust. Zero setting can be checked by comparing the output with relative humidity determined by a wet and dry bulb hygrometer. Adjustment is by means of a knurled nut on the Bourdon spring take-off arm.

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Taylor Instrument Companies
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IN THE TERRITORIES . . .

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▶ *WOLVERINE TUBE, DIV. OF CALUMET & HECLA, INC.* — W. H. McMath, sales representative, Birmingham, Ala. district; and George F. Wallace, sales representative, northwest Texas.

▶ *JANITROL HEATING AND AIR CONDITIONING DIV. OF MIDLAND-ROSS CORP.* — Air Conditioning Distributors Inc., distributors, northwest Texas.

▶ *FARRIS COMBUSTION CONTROLS CORP.* — Herre Bros. distributors, Pennsylvania.

▶ *CONOFLOW CORP.* — Bowen Industrial Equipment, Ltd., representatives, eastern canada.

▶ *AIR REDUCTION SALES CO., DIV. OF AIR REDUCTION CO., INC.* — A. S. Blodget, Jr., vice president of sales, midwestern region.

▶ *THE NATIONAL SUPPLY CO.* — Robert A. Hamilton, sales representative, Pittsburgh district office.

▶ *ALBION DIV., MCGRAW-EDISON CO.* — Lacy Blake, south-western regional manager.

▶ *FAIRMONT ALUMINUM CO.* — Paul E. Jones, manager of Chicago sales district.

▶ *TUBE TURNS DIV. OF CHEMETRON CORP.* — Robert E. Borchers, head of the St. Paul, Minn. district office.

▶ *PAINE CO.* — Hale F. Thomas, sales representative, Florida.

▶ *ALLIED METAL HOSE CO.* — Louis H. Hein Co., distributor Philadelphia.

▶ *E. I. DU PONT DE NEMOURS & CO.* — Donald W. Nesbit, Jr., "Freon" products division handling special projects and studies in field distribution; L. D. Copeland, Jr., representative, Oregon and Washington; and Douglas H. McKenna, Jr., representative, Utah.

▶ *DUNHAM-BUSH, INC.* — John R. Henderson, Jr., sales engineer, Oklahoma City, Okla.

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- *Reduce Initial Air Conditioning Cost 20 to 40%*
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- *Increase Equipment Life 15 to 20%*
- *Also Cools Plants Not Suitable For Air Conditioning*

SOME USERS' COMMENTS: SAVED $48,000 Cooling Costs • Savings of $14,500, yearly in air conditioning operating costs in one building • Decidedly Efficient • Increased Efficiency of Present Air Conditioning Equipment • Definite Value • Fulfilled Expectations • Would recommend to anyone • Excellent for Warehouse Cooling • No Hot Ceilings now, reduces internal temperatures 8-15° • Fanjet Roof Cooling will Cool Plants where Air Conditioning is not Economically Justified. With a Lease, Pay From Savings quickly.

Be Modern! Specify FANJET Thermostatically Controlled Roof Cooling

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Carter Products • Master Etching Co. • Marcal Co. • Tung Sol Electric •
Air-Perme-Ator Mfg. Co. • ITEK • Firestone • Lavezzi Machine Works • Airtron Co. •
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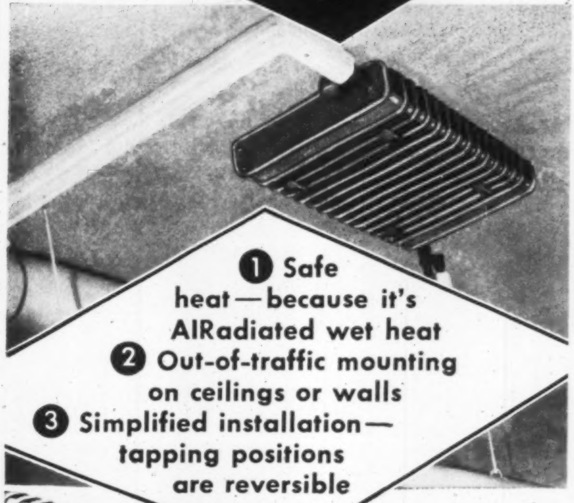
Perkins AIRadiators offer 3 big advantages for Plant-Area Heating



1. Safe heat—because it's AIRadiated wet heat
2. Out-of-traffic mounting on ceilings or walls
3. Simplified installation—tapping positions are reversible

Perkins AIRadiators operate on steam or hot water to 150 psi — there are no motors, fans, or other moving parts that can cause dangerous sparking — nothing to wear or fail. They mount easily anywhere on ceilings or walls, away from equipment and traffic. Reversible tapping locations assure simplified installation in either new or existing piping layouts.

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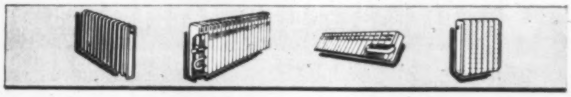

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because it's
Simpler

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Boiler Water
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Controls

■ Of all boiler water level controls, we believe Magnetrol to be the safest. Certainly it is the simplest.

A PERMANENT Alnico magnet, located *outside* the float chamber, links boiler water level and electrical controls. This infallible magnetic link eliminates mechanical parts normally subject to wear and fatigue failure. *Pioneered and perfected by Magnetrol,* it provides almost unlimited operating life.

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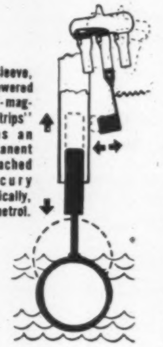

A magnetic sleeve, raised and lowered within a non-magnetic tube, "trips" or releases an Alnico permanent magnet attached to a mercury switch. Basically, this is Magnetrol.

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Mail the Coupon Now for the Facts

Gentlemen: Please send me Catalog Section III and full information on Magnetrol Boiler Water Level Controls. 9

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IN THE TERRITORIES

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▸ *THE RITTLING CORP.* — W. A. Hammond, Inc., distributors, western New York and adjoining parts of Pennsylvania; and Harry H. Wells, Jr., sales representative, Buffalo, N.Y.

▸ *FEDDERS CORP.* — Steve Jordan, Inc. — distributor, Kansas.

▸ *BOHN ALUMINUM & BRASS CORP.* — Appointed sales representatives are: H. D. Grant Co. Houston; L. S. Pawkett & Co., southwestern Texas; R. F. Zimmerman & Co., northwestern Louisiana; ATM Equipment Co., Inc., parts of Mississippi and Louisiana; J. C. Kelley Co., parts of Washington, Idaho, and Montana; Ware-McClelland Supply Co., Arizona; Fred Berger, parts of California and Nevada; Heatway Sales Co., Utah; Olsson Air Associates, Connecticut; R. W. Pentecost & Co., Baltimore and parts of Maryland; Chet Adams Co., North and South Carolina and parts of Virginia; and Lin Grisham, sales engineer, central Illinois.

▸ *MONSANTO CHEMICAL CO., PLASTICS DIV.* — Robert S. Garvie, district manager of Wilmington, Del. office.

▸ *MODINE MFG. CO.* — B & H Associates, sales representatives, Philadelphia.

▸ *SWARTWOUT FABRICATORS, INC.* — Kenneth A. Wallace, Jr., sales engineer.

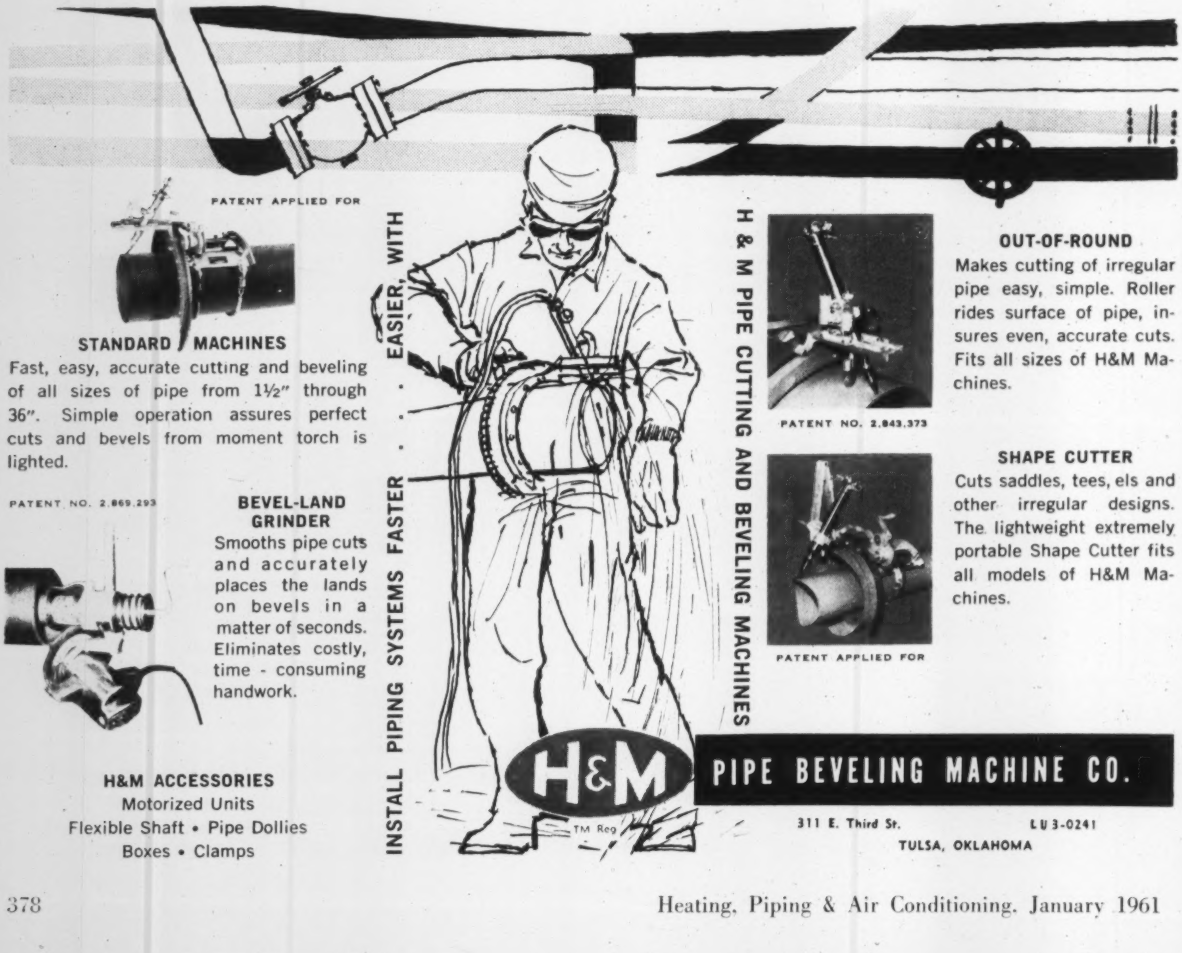
▸ *A. M. BYERS CO.* — George N. Coffey, central regional manager.

▸ *GENERAL ELECTRIC CORP.* — Richard T. Perkins, manager, foreign business operations, general control department.

▸ *BRYANT MFG. CO.* — Robert J. Fairhead, manager of Baltimore district office; Richard E. Johnson, manager of Albany, N.Y. district office; and Joseph Rosenson and Martin J. Boyle, sales managers, Indianapolis, Ind.

▸ *CRS INDUSTRIES, INC.* — Norman S. Wright & Co. — distributors, northern areas of California and Nevada.

▸ *TRANE CO.* — Virgil E. Carrier, manager, Denver, Colo. sales office.



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H & M PIPE CUTTING AND BEVELING MACHINES

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H&M ACCESSORIES
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Flexible Shaft • Pipe Dollies
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Makes cutting of irregular pipe easy, simple. Roller rides surface of pipe, insures even, accurate cuts. Fits all sizes of H&M Machines.

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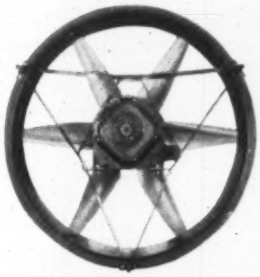
Aerospot and *Dynaflow* fans rate high in efficiency and safety features . . . offer advanced aerodynamic design and rugged construction. The models shown enjoy wide popularity with industrial users. Any unit may be furnished with **explosion-proof** motor and fan blades.



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For general or specific ventilation, man-cooling, or parts-cooling . . . to increase personnel efficiency and reduce lost time in cooling and drying hot parts. Portable . . . direction of blast adjustable. Explosion-proof motor, metal conduit and starter can be supplied. Conforms to state safety regulations.

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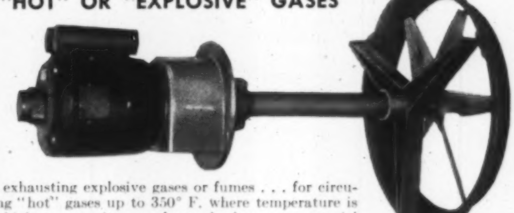
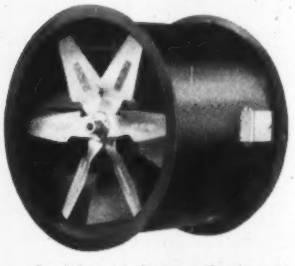
Six blade model illustrated. For exhausting or blowing against high static pressures. For general ventilation or specific processes where fumes are present. Sizes: 16" to 36" diameter. Capacities: 1240 to 26000 c.f.m. Two and four blade models available for applications at lower static pressures.

EXTENSION ARM DYNAFLOW FOR "HOT" OR "EXPLOSIVE" GASES



For exhausting explosive gases or fumes . . . for circulating "hot" gases up to 350° F. where temperature is too high to permit use of standard or even special motors. Used in heat exchangers, "sweater" ovens, etc. Fans from 16" to 36" diameters.



DUCTYPE UNITS

Direct Drive or Belt Drive

Direct drive model shown, also supplied with belt drive for high temperatures or corrosive air and gas handling. Designed for bolting in any duct run at any point or at either end. Sizes: 16" to 36" fans.

Send for complete specifications and listings of other fans available.

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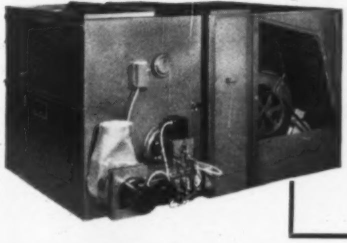
OIL AND GAS

CONTROLLED HEATING EFFICIENCY

FOR COMMERCIAL APPLICATION

The versatility of Tjernlund heating units simplifies installation and increases heating efficiency for all heating requirements. Interchangeable units are adaptable to either oil or gas or combination oil and gas assembly to provide economical and much more practical installation.



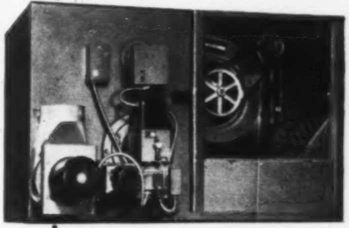
STYLE "A"

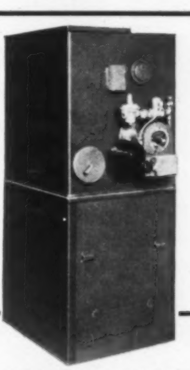
SUSPENDED OR LO-BOY

A versatile model that can be adapted to any heating and air-conditioning requirements. Optional arrangements provide interchangeable assembly according to space available.

STYLE "D"
COUNTERFLOW

Another Tjernlund design that can be easily adapted for any installation. This unit can be floor mounted, suspended or assembled for roof installation.





STYLE "H" HIGHBOY

A minimum floor area will handle many adaptions for efficient space heating from this unit. Can also be installed with coil cabinets and face and by-pass section.

ROOF MOUNTED PENTHOUSE UNIT

A highly efficient unit that handles heating, ventilating and air-conditioning needs. Simple installation with less cost by eliminating a chimney and much of the duct work.

INTERCHANGEABLE ASSEMBLY FOR ALL HEATING AND AIR CONDITIONING REQUIREMENTS

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Heating and Air-Conditioning Exposition
Chicago Feb. 13-16

TJERNLUND MANUFACTURING CO.

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Oakite Airefiner No. 52 in water

GIVES YOU
TROUBLE-FREE
AIR CONDITIONING—3 WAYS

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1. Checks growth of pipe-blocking, jet-clogging algae and slime
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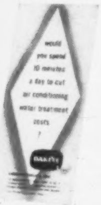
THIS MAINTENANCE MANUAL gives complete details on cleaning and maintaining air conditioning and refrigeration systems at less cost. For your free copy, write Oakite Products, Inc., 51B Rector Street, New York 6, N. Y.



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IN THE TERRITORIES

Continued

▶ *ROBERTSHAW-FULTON CONTROLS CO.* — Larry Rose, sales representative, Pacific southwest territory.

▶ *PITTSBURGH CORNING CORP.* — sales representative, New York office.

▶ *YORK DIV. OF BORG-WARNER CORP.* — Robert E. Regan, district sales manager, Pennsylvania Maryland, Virginia, and Washington, D.C.; and Funderburgh Co., distributors, western Kansas.

▶ *AMES IRON WORKS, INC.* — Hofmeister Co., sales representative, northwestern Indiana and northern Illinois.

▶ *PENTRON SALES CO.* — Arthur Selnick, factory representative, Philadelphia, Baltimore, Harrisburg, Pa., Washington D.C., and Richmond Va.; Manny Beckwith, head of New England Div.; and Krich-New Jersey, Inc., distributor, northern New Jersey.

▶ *L * A WATER CONDITIONING, INC.* — Howard G. Egginson, manager, eastern division.

▶ *HOOVER BALL AND BEARING CO.* — W. D. Reynolds, eastern zone manager.

▶ *ACME INDUSTRIES, INC.* — M. B. Kammer and R. H. Stauffacher, sales engineers, Houston; and Peter Butterfield, northern regional manager.

▶ *UNION CARBIDE DEVELOPMENT CO., DIV. OF UNION CARBIDE CORP.* — Air-Pak Products, Inc., sales representatives, New York and New Jersey.

▶ *L. J. WING MFG. CO.* — Con-Dea Supply Corp., distributors, New York City.

▶ *B. F. GOODRICH INDUSTRIAL PRODUCTS CO., DIV. OF THE B. F. GOODRICH CO.* — George R. Wertz, Jr., district manager for Chicago.

▶ *OHIO FURNACE CO.* — Don Riley, district sales manager for Ohio.

▶ *BARNEBEY-CHENEY CO.* — Richard L. Grener, manager of New York sales office.

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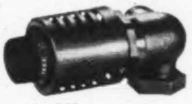
HEATING and TEMPERATURE CONTROL EQUIPMENT FOR NEW CONSTRUCTION, MODERNIZATION & MAINTENANCE

THERMOTROL . . . ***individual room temperature control***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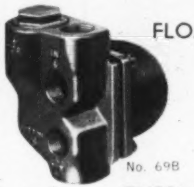
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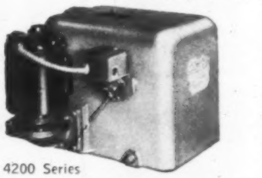
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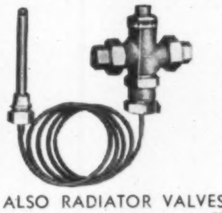

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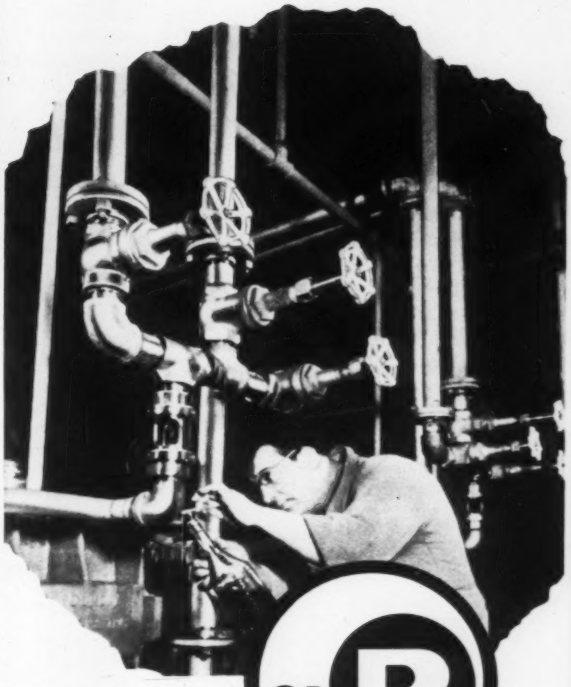

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▶ *SHAW-PERKINS MFG. CO.* — Fraser Associates, sales representatives, Beloit, Wisconsin.

▶ *ARKLA AIR CONDITIONING CORP.* — S. J. O'Brien Cos., distributors, New York.

▶ *RITE ENGINEERS & MFG. CORP.* — Glenn M. Rhode, director of sales, southern California.

▶ *THE C. A. OLSEN MFG. CO.* — John M. Beck, sales representative, Indiana, western Ohio, and eastern Kentucky.

▶ *DEVCON CORP.* — Lloyd C. Graham, regional sales manager for 11 western states.

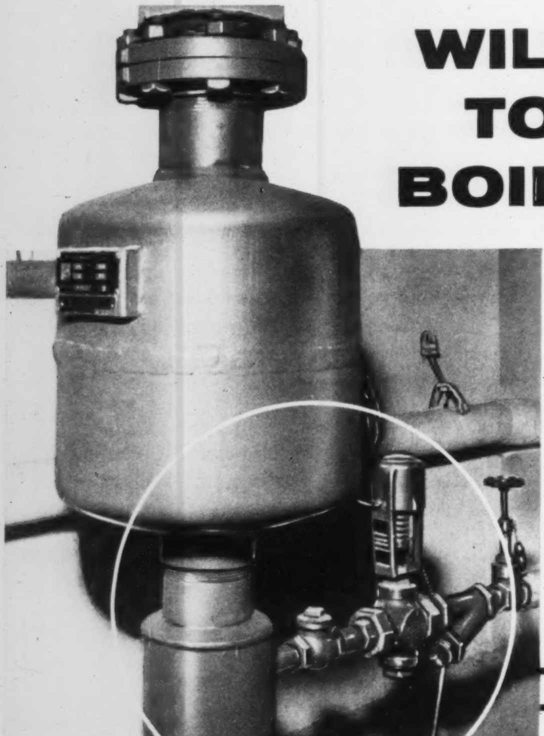
▶ *LIMA REGISTER CO.* — Norman DeLillo, district manager for New Jersey, Pennsylvania, Maryland, Delaware, and Washington D. C.

▶ *OAKITE PRODUCTS, INC.* — New technical service representatives are: Paul R. Bower, Akron O.; Robert D. Casey, Arizona; and Michael D. Juliana, Charleston, W.V.

▶ *OXY-CATALYST, INC.* — Three new distributors are: Landes, Zachary & Peterson, Colorado, Utah, Wyoming, Nebraska, and Idaho; Foster Equipment Co., Hawaii; and Crown Machinery Co., Washington.

▶ *MOTOR WHEEL CORP.* — Romine Industries, Inc., distributors, central Indiana.

▶ *NU WAY-SUNDSTRAND CORP.* — Jack Van Dieren, sales engineer, Cleveland.



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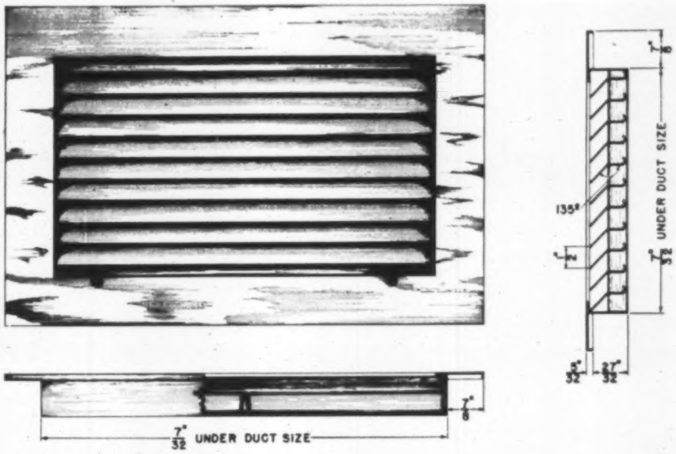

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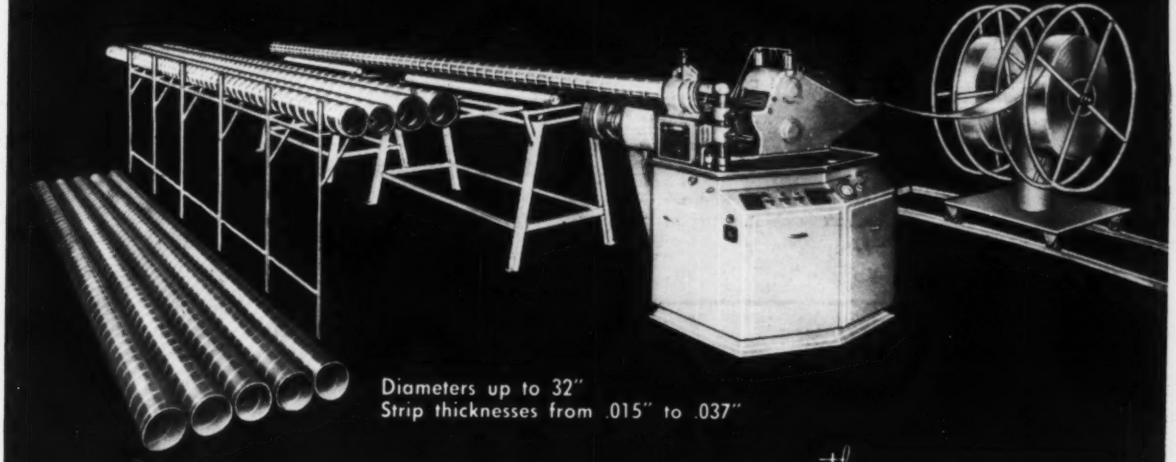

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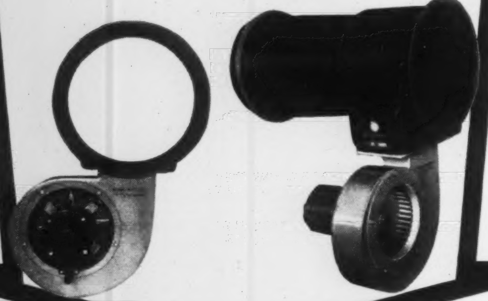

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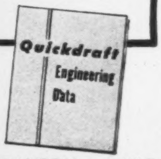

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▶ *JET-HEET, INC.* — Hyman Appleton, direct distribution district sales manager; and Robert R. Hill, southeast regional sales manager.

▶ *H. K. PORTER CO., INC.* — James H. Joyner, manager of Hawaiian sales.

▶ *IONAC CHEMICAL CO.* — Edward C. Petrie, sales representative, Florida; and Andrew Arger, sales representative, North Carolina and Virginia.

▶ *OLIN MATHIESON CHEMICAL CORP.* — James R. Whitlock, sales manager, Louisville, Ky.

▶ *McQUAY, INC.* — Brownlee-Morrow Engineering Co., sales representatives, Birmingham, Ala.

▶ *RESEARCH PRODUCTS CORP.* — Elwood Hughes, district salesman, western Pennsylvania and West Virginia.

▶ *TRION, INC.* — Four new distributors are: Allied Distributing Co., Cincinnati, O.; Mason Supply Co., Columbus, O.; Probst Supply Co., Marion, O.; and All Weather Supply Co., Youngstown, O.

▶ *DELAVAN MFG. CO.* — D and O Products, Inc., representatives, Kansas and western Missouri; and Lin Associates, representatives, New England.

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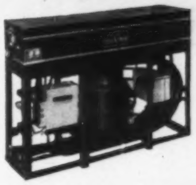

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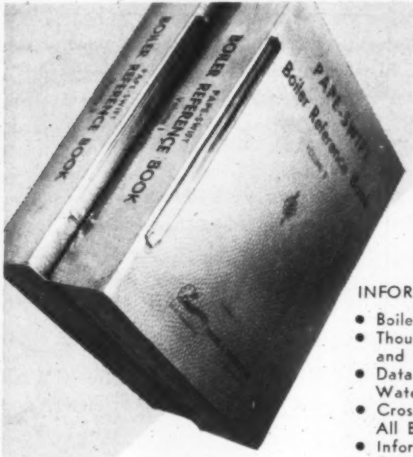

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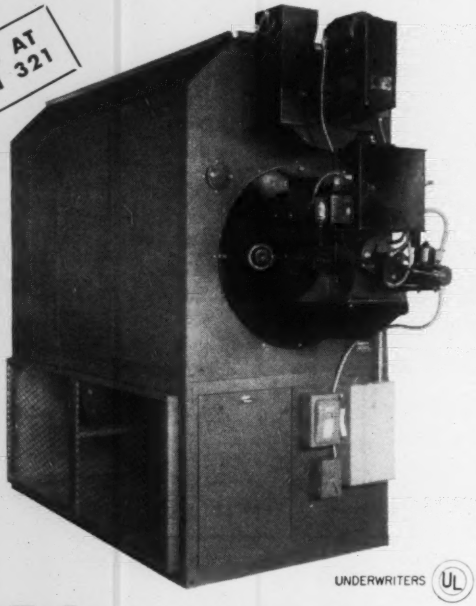

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JAN. 23-26 — *National Plant Maintenance & Engineering Show.* International Amphitheater, Chicago. Information: Clapp & Poliak, Inc., Management, 341 Madison Ave., New York 17.

JAN. 30-*FEB.* 2 — *University of Illinois and The Institute of Boiler and Radiator Manufacturers, 13th Short Course on Hydronic Heating and Cooling Systems, "Fundamentals of Being Competitive Through Managerial and Technical Training."* University of Illinois, Urbana, Ill. Information: Division of University Extension, 725 S. Wright St., Champaign, Ill.

FEB. 13-16 — *American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., semi-annual meeting.* Conrad Hilton Hotel, Chicago. Information: ASHRAE, 234 Fifth Ave., New York 1.

FEB. 13-16 — *International Heating and Air Conditioning Exposition.* International Amphitheater, Chicago. Information: E. K. Stevens, International Exposition Co., 480 Lexington Ave., New York 17.

MARCH 27-31 — *Third National Symposium on Temperature — Its Measurement and Control in Science and Industry.* Sponsored by American Institute of Physics, Instrument Society of America, and National Bureau of Standards. Columbus, Ohio. Information: W. R. Tilley, National Bureau of Standards, Washington, D.C.

APRIL 10-21 — *American Welding Society's 42nd Annual Convention and Welding Exposition.* Convention at the Sheraton-Atlantic Hotel and the Show at the Coliseum, New York. Information: AWS Information Center, 33 W. 39th St., New York 18.

APRIL 23-26 — *Oil Heat Institute of America, 39th Annual Convention.* Statler-Hilton Hotel, Washington, D.C. Information, Francis J. Schuster, convention chairman, OHI, 500 Fifth Ave., New York 36.

JUNE 12-15 — *National District-Heating Association, 52nd Annual Meeting.* Wentworth-by-the-Sea, Portsmouth, N.H. Information: John F. Collins, Jr., secretary-treasurer, NDHA, 827 N. Euclid Ave., Pittsburgh 6.

JUNE 12 — *Air Pollution Instrumentation Symposium,* in conjunction with the *JUNE* 12-16 *Annual Meeting of the Air Pollution Control Association.* Sponsored by ISA and APCA, Hotel Commodore, New York. Information, APCA, 4400 Fifth Ave., Pittsburgh 13.

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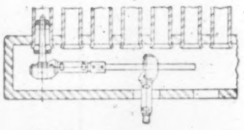

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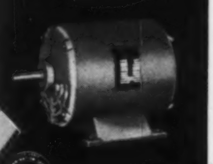

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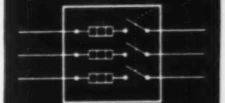

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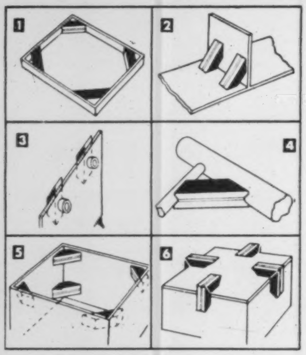

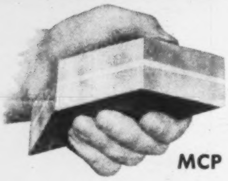

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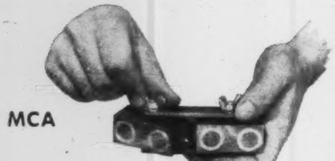

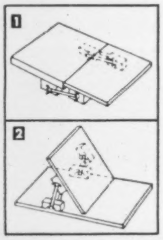

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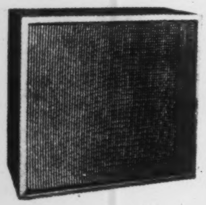

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Fossil Fuels In The Future (*TID*-8209) — A 63 page report reviews fossil-fuel resources and estimates the rate at which they will be depleted in the absence of new sources of energy. The study deals primarily with the situation during the remainder of this century. U.S. Atomic Energy Commission, Office of Technical Services, U. S. Department of Commerce, Washington 5, D.C. Price, 75 cents.

National Fire Codes, 160-61, 7 *volumes* — A compilation of the 181 standards developed by the National Fire Protection Association in the fields of flammable liquids and gases, combustible solids, dusts, chemicals, and explosives; building construction and equipment; electrical installations; and other subjects. The seven volumes have a total of 5614 pages. Publications Department, NFPA, 60 Batterymarch St., Boston 10. Price, $7.00 per volume, or $40.00 per set.

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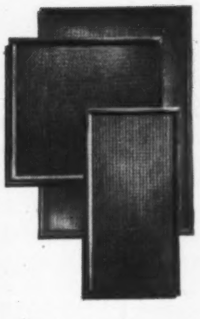
Summary Cooperative Research on Hydronic Heating and Cooling — Gives the results obtained in the course of the cooperative research program in steam and water heating and summer cooling which has been carried on at the University of Illinois Engineering Experiment Station since 1940. The program is sponsored by the Institute of Boiler and Radiator Manufacturers. References to published information are included at the end of the discussion of each subject. Professor W. S. Harris, Mechancial Engineering Department, University of Illinois, Urbana, Ill.



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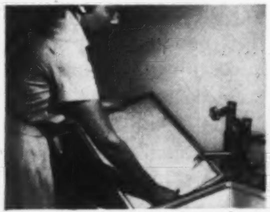
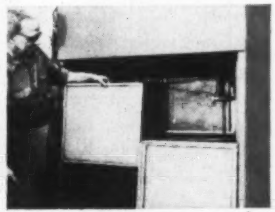


Rinse, shake and replace.



Trap particles as small as 4/10 micron

DUST-magnet filters

a product of STODDARD INDUSTRIES

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Save up to

25%

per installation with HOWELL

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Why pay for unnecessary voltage-reducing motor-starter elements to limit inrush currents for low-starting-torque loads? Where your controller *doesn't need* transformers, resistors or reactors? . . . and requires only two half-size contactors?

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- *Any* low-starting-torque load

Call your HOWELL MAN for application counsel.

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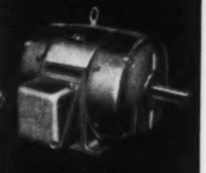

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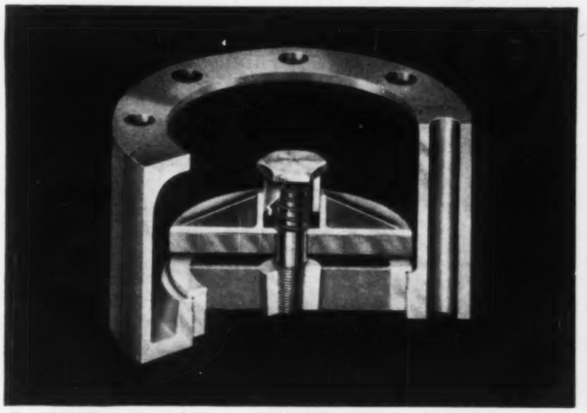

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. . . because the pressure sensitive spring closes the valve instantly and silently **before** reverse flow can start.

CPV SILENT CHECK VALVES are the positive, low cost way to eliminate water hammer, back drop and line surge in any piping system. Two point, guided lift design means disc can't tilt. Available in wide range of materials including stainless steel in sizes from ½-in. to 20 in. or more. Get the facts from your CPV representative or write for Catalog 600.

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BLAST COILS
HEATING & COOLING

CONDENSERS
AIR COOLED
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AIR HANDLING UNITS
STANDARD
HIGH PRESSURE
MULTI-ZONE

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TAG complete line includes thermometers, hydrometers and humidicators

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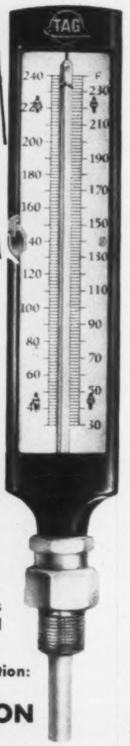
A Subsidiary of The Electric AutoLite Company



NEW BOOKS & REPORTS

Continued

Air Pollution Control (*STP* 281) — The influence of wind and weather on air pollution potential of industrial areas as a consideration in plant location is discussed in a 44 page hardcover book. In addition to meteorological factors, this symposium includes papers on analytical methods for aldehydes and fluorides in the atmosphere. The latter discussion is concerned with the separation of gaseous and particulate fluorides. American Society for Testing Materials, 1916 Race St., Philadelphia 3. Price, $1.50.

6th Edition Industrial Ventilation — A manual of recommended practice. Revised edition is a practical source of design data and information. Principles and applications illustrated with approximately 138 drawings, including 64 specific hood designs. The Committee on Industrial Ventilation, American Conference of Governmental Industrial Hygienists, P.O. Box 453, Lansing 2, Mich. Price, hardcover, $7.00, flexible cover, $4.00, in lots of 25 or more, $3.00.

Unfired Pressure Vessels — The American Society of Mechanical Engineers Code simplified by Robert Chuse. Book outlines and clarifies problems in shell thickness, material classification and identification, openings and reinforced openings, testing procedures, inspection and stamping, welded repair methods, workflow schedules, and other information. Robert Chuse, 7 Palmer Pl., Leonia, N.J. Price, $8.75.

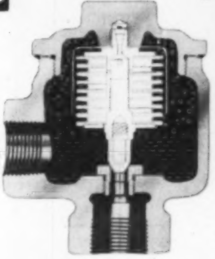
Tables of Thermodynamic and Transport Properties of Air, Argon, Carbon Dioxide, Carbon Monoxide, Hydrogen, Oxygen and Steam — This collection of tables is a revised edition of a series of compilations by the American National Bureau of Standards, and originally published by the U.S. Department of Commerce as N.B.S. Circular 564. Pergamon Press, Inc., 122 E. 55th St., New York 22. Price, $20.00.

Mechanical-Electrical Equipment Handbook for School Buildings — A detailed reference for the installation, maintenance, and use of mechanical-electrical equipment for school buildings, written by Harry Terry, consulting engineer. Illustrated book has 424 pages. John Wiley & Sons, Inc., 440 Park Ave. South, New York 16. Price, $9.50.

ELIMINATE

BELLOWS

DRIFT



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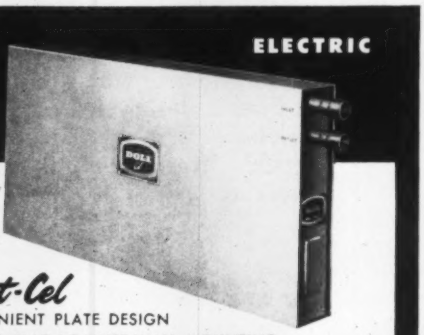

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ALLOWS FLAT-AGAINST-WALL MOUNTING

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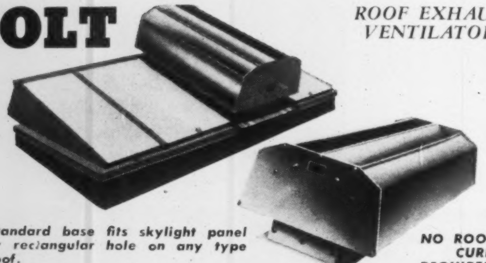

Standard base fits skylight panel or rectangular hole on any type roof.

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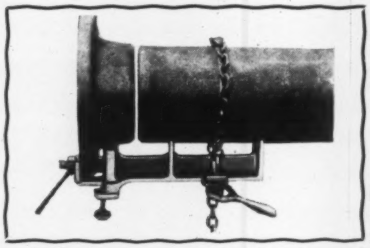
FOR WELDING PIPE • FLANGES • ELBOWS • ANGLES —also PIPE MARKERS



Jewel Clamps align pipe perfectly, and hold it there until it is welded. Two sizes, 1/2" to 8"; 8" to 16". Write for details.

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Heat-proof, vibration-proof. Will not shrink, crack or crumble. Prevents formation of rust and corrosion—makes disassembly easy.

7 Basic Blends

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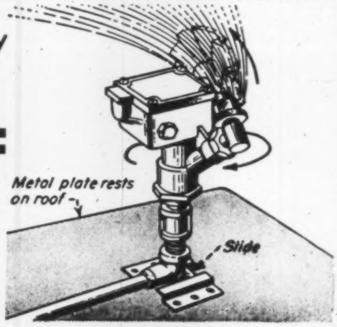
Metal plate rests on roof
Slide

Effectively efficiently economically

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CAST IRON & CAST BRASS

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Made split or solid
Clears sleeve ¼" high

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Ritter Floor & Ceiling Plates are solidly constructed, well designed, and superbly finished. Ritter plates meet City, State & Federal Specifications. We stock all sizes and styles, split or solid; in plain, Nickel or Chrome Plated finish from ¼" to 12" pipe size. Any special sizes, heights or shapes can be furnished.

Ritter plates have been furnished for: V A Hospitals, Schools, Housing Projects, Terminals, Office Buildings and the United Nations.

Other "Ritter" Products — Tunnel Stanchions, Pipe Rolls, Cast Iron Screwed Flanges and other Piping Specialties.

Write For Circulars

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Made solid only
Flat Type

No. 7
Made in two halves. Held by two screws. All dimensions to specifications.

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Rates for classified advertising are 20 cents for each word, including heading and address. One inch $8.00. Count nine words for keyed address. Minimum $3.00. Closing date 10th of month preceding publication.

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MANUFACTURER'S REPRESENTATIVES WANTED — Well known, long established manufacturer of Broad line of high quality Gas and Gas-Oil Industrial & Commercial Burners is intensifying and expanding national distribution. Also, introducing unusual new line of radiant heating equipment with unlimited applications. Territories available on attractive commission basis for aggressive Representatives, thoroughly familiar with industrial and commercial boiler conversions and industrial heating. Submit complete background in confidence. Address Key 1502A, Heating, Piping & Air Conditioning, 6 N. Michigan Ave., Chicago 2, Ill.

WANTED — agents calling on architects and selling to general, mechanical, ornamental iron, or sheet metal contractors, for promotion and sale of extruded aluminum louvers for commercial and industrial buildings. Available are exclusive territories in many cities and their trade area. Representative must be able to read and interpret construction prints and specifications. No warehouse requirements. Write lines carried, territory and types of accounts covered and pertinent information to J. A. Bartlett, 3705 Harley Road, Toledo 13, Ohio.

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An established manufacturer with 25 years experience, producing ventilating equipment is looking for manufacturer's agents in many sections of the country to sell their new line of industrial fans. The products include axial flow and tubeaxial fans, both direct and belt driven and power roof ventilators. Please reply Key 1361A, Heating, Piping & Air Conditioning, 6 N. Michigan Ave., Chicago 2, Ill.

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is Western Europe where rapidly rising living standards mean a big chance for you to cash in now on opportunities to produce and sell under local licensing arrangements with no cash investment. Since 1954 I have successfully operated as the promoter, organizer and supervisor of European business for a select group of top American heating, ventilating and air conditioning companies. Can take on one good additional account now. If you are already operating in Europe, but feel the need for better coverage and closer supervision, or if you are now thinking of getting set up, it will pay you to write now and see me in Chicago at the ASHRAE Show. Your products can make more money for you in Europe now.

J. J. La Rus
European Sales & Licensee Supervisor
2, avenue Le Notre
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ESTABLISHED MANUFACTURERS' REPRESENTATIVE, covering eastern Pennsylvania, southern New Jersey and the State of Delaware, calling on engineers, mechanical contractors and industrials, is interested in a complete line of roof ventilators. Reply Key 1500A, Heating, Piping & Air Conditioning, 6 N. Michigan Ave., Chicago 2, Ill.

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REGIONAL SALES MANAGER — National manufacturer seeking aggressive sales engineer experienced in comfort conditioning field preferably hot water heat. Age 30 to 45. B.S.M.E. or comparable work experience. Prefer successful background in promoting sales to architects and engineers at national level. Headquarters Chicago area. Salary open. Our personnel know of this ad. Send resume to Key 1504A, Heating, Piping & Air Conditioning, 6 N. Michigan Ave., Chicago 2, Ill.

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Manufacturer of air distribution equipment is seeking man with mechanical engineering background (college degree not necessary) and with sales experience working with field personnel. He must know and understand the problems of air conditioning (and in particular, the air distribution aspect) as it effects the architect, engineer, and contractor.

Company is a national organization with topnotch reputation for quality products and engineering know-how.

If you feel you are qualified, write, giving complete information on your background, current status, and salary requirements. All replies will be held in strict confidence, of course. Address Key 1506A, Heating, Piping & Air Conditioning, 6 N. Michigan Ave., Chicago 2, Ill.

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PLEASE SAY YES TO THE NEW MARCH OF DIMES

D. J. MURRAY MANUFACTURING CO.
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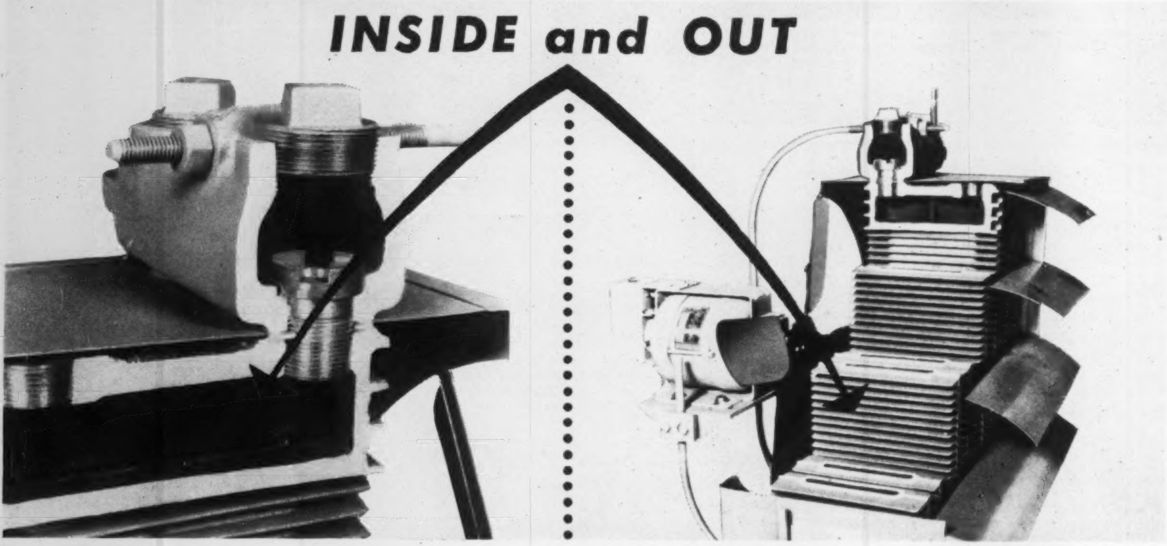
OFFICES IN PRINCIPAL CITIES
MANUFACTURERS OF GRID CAST IRON
UNIT HEATERS, BLAST HEATERS, RADIATORS.

it's the material that makes the difference . . .

INSIDE and OUT



CORROSION - Inside and Out - causes heating equipment failures!

BUT NOT WHEN YOU USE

GRID cast iron construction

- UNIT HEATERS
- BLAST HEATERS
- RADIATORS

CORROSION internally, caused by electrolytic action as in copper tubes, can't happen in GRID's cast iron steam chambers and headers. Nor can acid condensate corrode the bottom connections. Cast Iron, internally, resists corrosion.

CORROSION externally, caused by acid fumes cannot destroy GRID's cast iron finned heating surface. Widely spaced fins cast integral with the steam chamber will not corrode externally.

GRID HORIZONTAL BLOW UNIT HEATER DATA

Unit Heater Model	Casing Dimension		Over all Height	Center to Center Hanger Rod	Motor		Vol. Fan Cfm	Capacities at 2 PSIG Steam 60° F Ent. Air		Pipe Size		Support Rod Dia.	Approx. Ship. Wt. Lbs.
	Width	Height			Hp	Rpm		Btu Per Hr	Final Temp. °F	Supply	Return		
CI-1000	13 5/8	15 9/16	15 9/16	11 3/4	1/20	1700	570	27720	103	1 1/4	1 1/4	3/8	150
CI-1200	16 7/8	18 9/16	18 9/16	15	1/12	1700	800	43320	109	1 1/4	1 1/4	3/8	210
CI-1500	15 3/8	16	24 3/8	17 1/4	1/8	1750	1500	73000	104	1 1/2	1 1/2	1/2	280
CI-1520	15 3/8	21	29 3/8	17 1/4	1/8	1750	1700	96730	112	1 1/2	1 1/2	1/2	390
CI-2000	20 1/2	21	29	22 3/8	1/6	1150	2600	134000	107	2	1 1/2	1/2	490
CI-2025	20 1/2	26	34	22 3/8	1/6	1150	2875	163900	112	2	1 1/2	1/2	520
CI-2504	25 3/4	26	35 3/8	27 1/2	1/4	1150	3300	196000	114	2	1 1/2	5/8	660
CI-2500	25 3/4	26	35 3/8	27 1/2	1/2	1150	4350	212500	104	2	1 1/2	5/8	700
CI-2530	25 3/4	31	40 3/8	27 1/2	1/2	1150	4650	262500	111	2	1 1/2	5/8	900
CI-3000	30 7/8	31	40 3/8	32 5/8	1/2	850	5900	305000	107	2 1/2	1 1/2	3/4	1020
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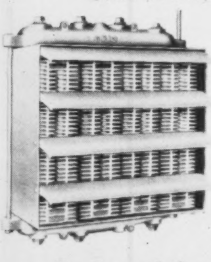
INSTALL GRID CAST IRON

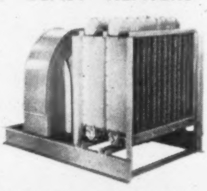
Send for Catalog 956 . . . The complete story on Grid Unit Heaters, Blast Heaters and Radiators.

UNIT HEATERS



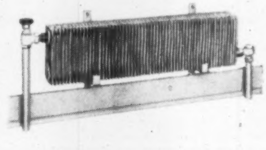
Available in Horizontal and Down Blow models. All cast iron built for steam pressures up to 250 PSI 450 Degrees.

BLAST HEATERS



Wide range of sizes furnished with or without pressure blowers. Compact cast iron design requires less space.

RADIATORS



Various combinations with or without Grill covers. For use in confined areas where motorized units are not desirable. For low or high pressures to 250 PSI.

Designed for operation on steam pressure up to 250 PSI 450° temperature

Section of January 1961 Heating, Piping & Air Conditioning

1961 DIRECTORY

Heating, Piping, and Air Conditioning Equipment for Industrial, Commercial, Institutional and Public Buildings

PART 1—Products Advertised In This Issue—Page 3d

Products advertised in this issue classified in "directory style." For pages on which advertising of manufacturers in this issue appears, see pages referred to opposite manufacturers listed under products advertised in this issue. See page 2d in this Directory Section for complete listing of all advertisers.

PART 2—All Products Classified—Page 11d

All products classified alphabetically, along with names of manufacturers. (Arranged by noun governing; for example, "unit heaters" listed under "heaters, unit.")

PART 3—All Trade Names—Page 136d

Product trade names alphabetized, identified with names of manufacturers. Trade names the same as or identifiable from company names are not listed. Manufacturers with such trade names can be found under their product classifications in Parts 1 & 2.

PART 4—All Manufacturers' Addresses—Page 163d

Names and addresses of all manufacturers.

Heating, Piping & Air Conditioning
6 N. Michigan Ave.
Chicago 2, Illinois

INDEX TO ADVERTISERS

Firms represented in this issue are identified by the page on which their advertising appears.

A

A & A Register Co., The 308
Acme Industries, Inc. 258
Aerofin Corp. 50, 51
Air & Refrigeration Corp. 368
Air Conditioning Inc. 128, 129
Air Conditioning Industries, Inc. .. 370
Air Devices, Inc. 82
Air Filter Institute 391
Air Moving & Conditioning Association 364
Airtherm Mfg. Co. 137
A-J Mfg. Co. 383
Aladdin Heating Corp. 371
Alco Valve Co. 273
Allen-Bradley Co. 269
Allied Chemical Corp., General Chemical Div. 315
Allied Metal Hose Co. 286, 287
Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc. 371
American Air Filter Co., Air Filter Div. 117
American Air Filter Co., Engineered Air Systems Div. 319
American Chain & Cable Co., Inc.— RP&C Valve Div. 140
American Engineering Co. 302
American Gas Association 124, 125
American Metal Mfg. Co. 293
American-Standard Industrial Div. 39, 40, 41; 42
Ames Iron Works 336
Ammerman Co., Inc. 346
Anaconda American Brass Co. 120
Anderson Co., V. D. Div. of International Basic Economy Corp. .. 338
Anemostat Corp. of America 353
Aronson Machine Company 388
Arkos Mfg. Co. 116
Armstrong Machine Works 260
Arrow-Hart & Hegeman Electric Co. 300
Aurora Pump Co. 134

B

Babbitt Steam Specialty Co. 362
Babcock & Wilcox Co., Tubular Products Div. 3
Badger Mfg. Co. 30
Baltimore Aircoil Co., Inc. 265
Barber-Colman Co. 250, 251
Barco Mfg. Co. 342
Barry Blower Co. 274
Bastian-Morley Co., Inc. 344
Bell & Gossett Co. 31, 261
Bethlehem Steel Company 16, 93
Binks Mfg. Co. 318
Boiler Engineering & Supply Co., Inc. 320
Bohn Aluminum & Brass Corp. 34
Bonney Forge & Tool Works 298
Buensod Stacey, Inc. 38
Buffalo Forge Co. 72, 73
Burgess-Manning Co. 339

C

Cambridge Filter Corp. 332
Campbell Heating Co. 314
Capitol Mfg. Co. 88
Carnes Corp. 13, 15, 17
Central Station Steam Co. 32
Century Electric Co. 54, 55
Champion Blower & Forge Co. 361
Chase & Sons, Inc. 293
Chatleff Controls, Inc. 130
Chicago Blower Corp. 4
Chicago Pump Co. 312
Chrysler Corp., Airtemp Div. 147
Clarage Fan Co. 36, 37
Color-Art Prtg. & Stationery Co. .. 385
Combination Pump Valve Co. 389
Committee of Steel Pipe Producers 48, 49
Continental Mfg. Co. 373
Continental Air Filters, Inc. 301
Cook Co., The, Loren 372
Crane Co., Industrial Products Group 91

D

Davidson Fan Co. 304
Diamond Mfg. Co. 365
Diehl Mfg. Co., Subs. of The Singer Mfg. Co. 109
Dodge Mfg. Co. 26
Dole Refrigerating Co. 392
Dunham-Bush, Inc. 28, 29
Duriron Co., Inc., The 145
Dwyer Mfg. Co., F. W. 387

E

Eagan Co., Inc., Walter H. 25
Ellicott-Brandt, Inc. 351
Enterprise Engine & Machinery Co., Adel Div., General Metals Corp. .. 322
Everlasting Valve Co. 271

F

Fairbanks Co., The 324
Fairbanks, Morse & Co. 345
Farr Co. 83, 84, 85, 86
Fedders Corp. 326
15th International Heating & Air Conditioning Exposition 270
Fiske Co. 310
Flanders Filters, Inc. 388
Flexible Tubing Corp. 275
Flexonics Corp., Subsidiary of Calumet & Hecla, Inc. 18
Fluor Products Co. 297
Frederick Iron & Steel, Inc. 350
Fuller Co., Lehigh Fan & Blower Div. 328
Fulton Sylphon Div., Robertshaw-Fulton Cont. Co. 278

G

Gallaher Co. 127
General Air Products Corp. 143
General Controls Co. 309
General Rubber Corp. 358
Goodall Rubber Co. 281
Gordon & Piatt, Inc. Inside Back Cover
Governair Corp. 272
Graphics, Inc. 375
Greenlee Tool Co. 330
Grinnell Co., Inc. .... Inside Front Cover
Gustin-Bacon Mfg. Co. 89

H

Halstead & Mitchell 97
H & M Pipe Beveling Machine Co. .. 378
Hansson, Inc. Elof 149
Havens Cooling Towers, Div. of Havens Structural Steel Co. 283
Hays Mfg. Co. 103, 104
Hayes Furnace Mfg. & Supply Co. .. 305
Henry Valve Co. 101
Highside Chemicals, Inc. 387
Hoffman Specialty Mfg. Corp. 10
Howell Electric Motors Co. .. 387, 389
Hydrotherm, Inc. 360

I

Ilg Electric Ventilating Co. ... 76, 77
Illinois Testing Laboratories, Inc. .. 371
Imperial Damper Co. 276
Independent Register Co., The 292
Industrial Acoustics Co., The 8, 9
Ingersoll-Rand Co. 90
Insul-Fil Co. 150, 151
Iron Fireman Mfg. Co. 299

J

Jackes-Evans Mfg. Co. 110
Janitrol Heating & Air Conditioning, A Div. of Midland-Ross Corp. 121-122
Jenkins Bros., Inc. 262
Jenn-Air Co., Inc. 285
Jewel Mfg. Co., Inc. 392
Johns-Manville 52, 53
Johnson Heater Corp. 386
Johnson Service Co. .. Outside Back Cover

K

Kennedy Valve Mfg. Co. 363
Kilbury Mfg. Co., Inc. 392
Kritzer Products, A Div. of Peerless of America, Inc. 385

L

Lau Blower Co., The 102
Lennox Industries, Inc. 74, 75, 124, 125
Lincoln Electric Co., The 56, 57
Longyear Co., E. J. 361
Lunkenheimer Co., The 106

M

Magnetrol, Inc. 377
Mammoth Industries, Inc. 291
Marley Co., The 277
Marlo Coil Co. 111
Marshalltown Mfg., Inc., Tagliabue Div. 390
Marsh Instrument Co., Div. of Colorado Oil and Gas Corp. 343
McDonnell & Miller, Inc. 294, 295
McQuay, Inc. 303
Metra Flex Co., The 352
Mid-Continent Screw Products Co. .. 374
Midland-Ross Corp. 121, 122, 282
Miller Valve Co., Inc. 114
Mine Safety Appliances Co. 317
Minneapolis-Honeywell Regulator Co. 138, 139
Miracle Adhesives Corp. 256
Missile Dynamics Corp., Air Movement Div. 337
Modine Mfg. Co. 78, 79
Moeller Instrument Co. 356
Molco Drilling Equipment Co. 268
Monarch Mfg. Works, Inc. 100
Moore, Inc., Goodloe E. 357
Moore & Co., Samuel, DeKoron Products Div. 105
Muellermist Irrigation Co., Fanjet Roof Cooling Div. 376
Murray Mfg. Co., D. J. 394

N

Nash Eng. Co., The 152
National Heater Co., The 349
National Supply Co., The Tubular Products Div. 321
National Tube Div., United States Steel Corp. 131
Nesbitt Inc., John J. .. 19, 20, 21, 22
New York Blower Co., The 27
Niagara Blower Co., The 352
Norman Products Co. 335

O

Oakite Products, Inc. 380
Octagon Ventilator Mfg. Co. 311
Ohio Brass Co. 113
Owens Corning Fiberglas Corp., Industrial & Commercial Div. 132, 133

P

Palmer Thermometers, Inc. 348
Pape-Swift Boiler Reference Publications 385
Parker Boiler Mfg. Co., Sid E. 98
Patterson-Kelley Co., Inc., The 95
Pennsylvania Engineering Co. 306
Penn Ventilator Co. 43
Phelps Dodge Copper Products Corp. 247
Phillips Cooling Tower Co. 80, 81
Pittsburgh Plate Glass Co., Fiber Glass Div. 35
Porter Co., Inc., H. W. 366, 367
Powerline Fan Co., Div. of Chelsea Products 68, 69
Powers Regulator Co. 6, 7
Precision Parts Corp. 369
Pyramid Instrument Corp. 289

Q

Quickdraft Company 384

R

Radiator Specialty Co. 392
Reading Tube Corp. 259
Reed Mfg. Co. 284
Reliance Electric & Eng. Co. .. 279, 280
Reznor Mfg. Co. 333
Ric-wiL, Inc. 252
Ridge Tool Co., The 92
Riggio Co., Inc., Frank D. 391
Ritter Pattern & Casting Co., Inc. .. 393
Roberts Co., C. A. 381
Robertson Co., H. H. 115
Robvon Backing Ring Co. 354
Rockwell Co., W. S. 348
Rotherm Engrg. Co. 375
RP&C Valve Div.-American Chain & Cable Co., Inc. 140
Rubatex Div. of Great American Industries 391
Ruppright's Rotary Roof Cooler .. 392

S

Sarco Co., Inc. 87
Sarcotherm Controls, Inc. 87
Schemenauer Mfg. Co. 99
Sealmaster Bearings Div. of Stephens-Adamson Mfg. Co. 96
Shaw-Perkins Mfg. Co. 377
Skidmore Corp. 253
Smith Co., Inc., H. B. 67
Sonoco Products Co. 14
South Bend Air Products 379
Southern Plastics Co. 362
Space-Ray Corp. 288
Spiro, U.S.A., Inc. 383
Sporlan Valve Co. 24
Sterling, Inc. 381
Stoddard Industries, Inc. 389
Superior Combustion Industries, Inc. 257
Surface Combustion Div., Midland-Ross Corp. 282
Swartwout Fabricators, Inc. 329

T

Taco Heaters, Inc. 341
Tankit Co., Inc., The 392
Taylor Instrument Cos. 375
Temtrol, Inc. 390
Thermal Engineering Corp. 44, 45, 46, 47
Titus Mfg. Co. 58
Tjernlund Mfg. Co. 379
Trane Co., The 70, 71
Trerice Co., H. O. 389
Tuttle & Bailey Div. of Allied Thermal Corp. 245, 246
Typhoon Air Cond. Div., Hupp Corp. 327

U

Union Asbestos & Rubber Co. 118
Union Iron Works Div. of Riley Stoker Corp. 112
Universal Diffuser Corp. 323
United Electric Co. 373
United Sheet Metal Co., Inc. 357
U. S. Air Conditioning Corp. 365
U. S. Flexible Metallic Tubing Co. . 107
United States Register Co. 325
United States Steel Corp. 131

V

Vapor Heating Corp. 119
Vibration Mountings, Inc. 248, 249
Vilter Mfg. Co., The 334
Virginia Smelting Co., Refrigeration Div. 33

W

Walton Laboratories, Inc. 313
Walworth Company 254, 255
Waterloo Register Co. 123
Weil Pump Co. 355
Weinman Pump Mfg. Co., The 296
Weksler Instruments Corp. 290
Western Engineering & Mfg. Co. ... 369
Wheatland Tube Co. 126
Wiedeke Co., The Gustav 387
Will-Burt Company, The 23
Williams Gauge Co. 350
Wilson Engineering Co. 382
Wiremold Co., The 346
Witco Chemical Co. 266, 267
Wood's Sons Co., T. B. 331

Y

Yarnall-Waring Co. 94
Young Regulator Co. 108

DIRECTORY SECTION

HEATING, PIPING, AND AIR CONDITIONING EQUIPMENT FOR INDUSTRIAL AND ALL OTHER LARGE BUILDINGS

PART 1—PRODUCTS ADVERTISED IN THIS ISSUE

The products classified in this Part 1 of the Directory Section are only those advertised in this issue. For the complete listings of these and other products made by all manufacturers, see Part 2, starting on page 11d. For the pages on which you will find the advertising of manufacturers in this issue, see the index to Advertisers on page 2d of this yellow Directory Section. Page numbers in this Part 1 are given as an extra convenience. Some page numbers may not be correct in this Part 1 because of necessary shifts after this Part went to press. The Index to Advertisers on page 2d (on opposite page) of this Directory Section should be referred to for advertisers in this issue.

ABSORBERS, SHOCK, LIQUID, TO ELIMINATE WATER HAMMER IN PIPING

General Rubber Corp.	358
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co.	107
Vibration Mountings, Inc.	248, 249

ABSORBERS, SOUND, DUCT SECTION, PREFABRICATED, FOR NOISE CONTROL IN DUCT SYSTEMS

American Engineering Co.	302
Hamsson, Inc., Elof, Acoustical Div.	149
Industrial Acoustics Co., Inc.	8, 9

ABSORBERS, VIBRATION, FOR REFRIGERANT AND OTHER PIPE LINES

Allied Metal Hose Co.	286, 287
Flexonics Corp., Subsid. of Calumet & Hecla, Inc.	18
General Rubber Corp.	358
Keflex Mfg. Div. of U. S. Felxible Metallic Tubing Co.	107
MetraFlex Co., The	352
Vibration Mountings, Inc.	248, 249

ADHESIVES, FOR INSULATION OTHER THAN PIPE

Miracle Adhesives Corp.	256
Moore, Inc., Goodloe E.	357

ADHESIVES, FOR PIPE COVERING

Miracle Adhesives Corp.	256
Moore, Inc., Goodloe E.	357

AFTERCOOLERS, FOR HOT LIQUIDS

Wilson Engineering Corp.	382

ALARMS, HIGH & LOW BOILER WATER

Magnetrol, Inc.	377
McDonnell & Miller, Inc.	294

AMMETERS

Pyramid Instrument Corp.	289

ANALYZERS, CARBON DIOXIDE, PORTABLE

Dwyer Mfg. Co., F. W.	387

ANEMOMETERS

Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc.	371
Dwyer Mfg. Co., F. W.	387

BASES, VIBRATION ISOLATING

Vibration Mountings, Inc.	248, 249

BEARINGS, BALL

Dodge Mfg. Corp.	26
Sealmaster Bearings Div. of Stephens-Adamson Mfg. Co.	96

BEARINGS, PILLOW BLOCK

Dodge Mfg. Corp.	26
Lau Blower Co.	102
Sealmaster Bearings Div. of Stephens-Adamson Mfg. Co.	96

BEARINGS, SLEEVE

Dodge Mfg. Corp.	26

BELLOWS, THERMOSTATIC AND METALLIC

Flexonics Corp., Subsid. of Calumet & Hecla, Inc.	18
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co.	107

BELTING, FLAT, RUBBER

Goodall Rubber Co.	281

BELTS, V

Goodall Rubber Co.	281
Wood's Sons Co., T. B.	331

BENDERS, PIPE

Greenlee Tool Co., Div. of Greenlee Bros. & Co.	330

BLADES, PROPELLER FAN

South Bend Air Products, Inc.	379

BLOWERS, HIGH PRESSURE

American-Standard Industrial Div.	39-42
Buffalo Forge Co.	72, 73
Clarage Fan Co.	36, 37
Power Line Fan Co., Inc., Subsid. of Chelsea Products, Inc.	68, 69

BOARDS, PANEL AND CONTROL

Barber-Colman Co.	250, 251
Graphics, Inc.	375
Iron Fireman Mfg. Co.	299
Minneapolis-Honeywell Regulator Co.	138, 139
Powers Regulator Co.	6, 7

BOILERS, HEATING, CAST IRON, SECTIONAL

Bastian-Morley Co., Inc.	344
Hydrotherm, Inc.	360
Smith Co., Inc., H.B.	67

BOILERS, HEATING, STEEL, FIRE TUBE

American-Standard Industrial Div.	39-42

BOILERS, HEATING, STEEL, WATER TUBE

Parker Boiler Mfg. Co., Sid. E.	98

BOILERS, HIGH PRESSURE—HIGH TEMPERATURE HOT WATER

Union Iron Works, Div. of Riley Stoker Corp.	112

BOILERS, PACKAGED UNITS, HEATING AND PROCESS—Including Controls, Feed Pump, etc.

American-Standard Industrial Div.	39-42
Ames Iron Works, Inc.	336
Boiler Engineering & Supply Co., Continental Boiler Div.	320
Iron Fireman Mfg. Co.	299
Parker Boiler Mfg. Co., Sid. E.	98
Precision Parts Corp.	369
Superior Combustion Industries, Inc.	257
Vapor Heating Corp.	119

BOOKS, TECHNICAL DATA

Pape-Swift Boiler Reference Publications	385

BREAKERS, VACUUM, FOR STEAM-USING EQUIPMENT

Hoffman Specialty Mfg. Corp.	10

BURNERS, GAS, COMMERCIAL AND INDUSTRIAL

Bastian-Morley Co., Inc.	344
Enterprise Div., General Metals Corp.	322
Gordon & Piatt, Inc.	IBC
Iron Fireman Mfg. Co.	299

BURNERS, GAS AND OIL COMBINED, COMMERCIAL AND INDUSTRIAL

Enterprise Div., General Metals Corp.	322
Gordon & Piatt, Inc.	IBC
Iron Fireman Mfg. Co.	299

BURNERS, NATURAL AND LP GAS, COMMERCIAL AND INDUSTRIAL

Gordon & Piatt, Inc.	IBC

BURNERS, OIL, COMMERCIAL AND INDUSTRIAL

Enterprise Div., General Metals Corp.	322
Iron Fireman Mfg. Co.	299

CEILINGS, RADIANT HEATING AND COOLING, AND ACOUSTICAL CONTROL

Burgess-Manning Co., Architectural Products Div.	339

CEMENT & COMPOUNDS, PIPE JOINT

Highside Chemicals, Inc.	387
Radiator Specialty Co.	392

CHANGERS, SPEED

American-Standard Industrial Div.	39-42
Reliance Electric & Engineering Co.	279, 280
Wood's Sons Co., T. B.	331

CHASERS, PIPE AND BOLT

Ridge Tool Co.	92

CHILLERS, WATER, FOR AIR CONDITIONING AND REFRIGERATION

Acme Industries, Inc.	258
American-Standard Industrial Div.	39-42
Bell & Gossett Co.	31
Chrysler Corp., Airtemp Div.	147
Kritzer Products Div., Peerless of America, Inc.	385
Vilter Mfg Co.	334

Products Advertised in This Issue

CIRCULATORS, FOR HOT WATER HEATING SYSTEMS
Hoffman Specialty Mfg. Corp. 10
Taco Heaters, Inc. 341

CLAMPS, PIPE REPAIR
H & M Pipe Beveling Machine Co. 378

CLAMPS, PIPE, WELDING
Aronson Machine Co. 388
Jewel Mfg. Co. 392

COATINGS, PROTECTIVE, FOR METALS
Chase & Sons, Inc. 293
Witco Chemical Co., Inc. 266, 267

COILS & PANELS, RADIANT HEATING & COOLING, PREFABRICATED
Burgess-Manning Co., Architectural Products Div. 339

COILS, FOR HOT WATER STORAGE TANKS
Ellicott-Brandt, Inc. 351

COILS, PIPE
Grinnell Co., Inc. .... IFC
Vilter Mfg. Co. 334

COLLECTORS, DUST
Buffalo Forge Co. 72, 73

COLLECTORS, MIST
Southern Plastics Co. 362

COMPOUNDS, BOILER CLEANING
Tankit Co., The 392

COMPOUNDS, BOILER AND RADIATOR SEALING
Radiator Specialty Co. 392

COMPOUNDS, CLEANING, PIPE COIL & CONDENSER, AND TANKS
Oakite Products, Inc. 380

COMPRESSORS, AIR
Johnson Service Co. .... OBC

COMPRESSORS, REFRIGERATING, CENTRIFUGAL
American-Standard Industrial Div. 39-42

COMPRESSORS, REFRIGERATING, COMBINED WITH CONDENSER, WATER CHILLER, PIPING CONNECTIONS, AND CONTROLS
Acme Industries, Inc. 258
Bell & Gosset Co. 31
Chrysler Corp., Airtemp Div. 147
Vilter Mfg. Co. 334

COMPRESSORS, REFRIGERATING, RECIPROCATING
Vilter Mfg. Co. 334

CONDENSERS, REFRIGERATING, AIR COOLED
Bohn Aluminum & Brass Corp., Danville Div. 34
Dunham-Bush, Inc. 28, 29
Halstead & Mitchell 97
Lennox Industries Inc. 74, 75
Marley Co., The 277
Temtrol, Inc. 390
Thermal Engineering Corp. 44, 45, 46, 47
Typhoon Air Conditioning Co., Div. of Hupp Corp. 327

CONDENSERS, REFRIGERATING, EVAPORATIVE
Acme Industries, Inc. 258
Baltimore Aircoil Co., Inc. 265
Buffalo Forge Co. 72, 73
Governair Corp. 272
Niagara Blower Co. 352
Temtrol, Inc. 390
Vilter Mfg. Co. 334

CONDENSERS, REFRIGERATING, SHELL AND COIL
Bell & Gossett Co. 31
Halstead & Mitchell 97

CONDENSERS, REFRIGERATING, SHELL AND TUBE
Bell & Gossett Co. 31
Vilter Mfg Co. 334

CONDUIT, UNDERGROUND PIPING
Porter & Co., Inc., H. W. 366, 367
Ric-wiL, Inc. 252

CONNECTIONS, DUCT, FLEXIBLE
Flexible Tubing Corp. 275

CONTROLLERS AND STARTERS, MOTOR
Allen-Bradley Co. 269
Arrow-Hart & Hegeman Electric Co. 300
Minneapolis-Honeywell Regulator Co. 138, 139

CONTROLS, FAN
Minneapolis-Honeywell Regulator Co. 138, 139

CONTROLS, FOR STARTING AND STOPPING PUMPS
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp. 312
Weil Pump Co. 355

CONVERTERS, STEAM
Ellicott-Brandt, Inc. 351

CONVEYORS, COAL AND ASH
Will-Burt Co., The 23

COOLERS, UNIT
Vilter Mfg. Co. 334

COUPLINGS, PIPE
Wheatland Tube Co. 126

CUT-OFFS, LOW WATER, HEATING BOILER
Magnetrol, Inc. 377
McDonnell & Miller, Inc. 294

CUTTERS, FLAME, FOR PIPING
H & M Pipe Beveling Machine Co. 378

CUTTERS, PIPE
Ridge Tool Co. 92

DAMPERS, DUCT, MANUALLY OPERATED
General Air Products Corp. 143
Imperial Damper Co. 276
United States Register Co. 325
Waterloo Register Co., Inc. 123

DAMPERS, DUCT, REMOTE CONTROLLED
Imperial Damper Co. 276
Johnson Service Co. .... OBC

DAMPERS, FIRE, FUSIBLE LINK
Imperial Damper Co. 276

DEHUMIDIFIERS, SPRAYED COIL
American-Standard Industrial Div. 39-42
Buffalo Forge Co. 72, 73
Clarage Fan Co. 36, 37
Thermal Engineering Corp. 44, 45, 46, 47

DEHYDRATORS, REFRIGERANT
Alco Valve Co. 273
Henry Valve Co. 101

DIFFUSERS, AIR, BASEBOARD
Anemostat Corp. of America 353
Carnes Corp. 13, 15, 17

DIFFUSERS, AIR, CEILING
Barber-Colman Co. 250, 251
Carnes Corp. 13, 15, 17
Gallaher Co., The 127
General Air Products Corp. 143
Titus Mfg. Corp. 58
Tuttle & Bailey, Div. of Allied Thermal Corp. 245, 246
United States Register Co. 325
Universal Diffuser Corp. 323
Waterloo Register Co., Inc. 123

DIFFUSERS, AIR, CEILING, WITH COMBINED LIGHTING FIXTURES
Carnes Corp. 13, 15, 17

DIFFUSERS, AIR, FLOOR
Anemostat Corp. of America 353

DIFFUSERS, AIR, HIGH PRESSURE
Air Devices, Inc. 82
Titus Mfg. Corp. 58
Tuttle & Bailey, Div. of Allied Thermal Corp. 245, 246
Universal Diffuser Corp. 323

DIFFUSERS, AIR, WALL
Carnes Corp. 13, 15, 17
General Air Products Corp. 143
Independent Register Co. 292
Universal Diffuser Corp. 323
Waterloo Register Co., Inc. 123

DISTRIBUTORS, REFRIGERANT, FOR COOLING COILS
Alco Valve Co. 273

DRILLS, ELECTRIC & PNEUMATIC, PORTABLE
Molco Drilling Machines, Inc. 268

DRILLS, MASONRY
Longyear Co., E. J. 361
Molco Drilling Machines, Inc. 268

DRIVES, FLUID OR HYDRAULIC, FOR POWER TRANSMISSION
American-Standard Industrial Div. 39-42

DRIVES, GEAR
Reliance Electric & Engineering Co. 279, 280

DRIVES, V-BELT
Wood's Sons Co., T. B. 331

DRYERS
National Heater Co., Inc. 349

DUCTS AND DUCT FITTINGS, PREFABRICATED, FLEXIBLE, NON-METALLIC
Flexible Tubing Corp. 275
Wiremold Co., The 346

DUCTS AND DUCT FITTINGS, PREFABRICATED, NON-FLEXIBLE, METALLIC
Robertson Co., H. H. 115
United Sheet Metal Co., Inc. 357

DUCTS AND DUCT FITTINGS, PREFABRICATED, NON-FLEXIBLE, NON-METALLIC
Sonoco Products Co., Construction Products Div. 14

DUCTS, SPIRAL WELDED
American Metal Mfg. Co. 293
SPIRO U.S.A., Inc. 383

Products Advertised in This Issue

EJECTORS, SEWAGE
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp. 312

ELECTRODES, ARC WELDING
Lincoln Electric Co. 56, 57

ELIMINATORS, AIR, FOR HEATING & PIPING SYSTEMS
Hoffman Specialty Mfg. Corp. 10
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp. 343
Sarco Co., Inc. 87

ENCLOSURES FOR PERIMETER AIR CONDITIONING SYSTEMS AND AIR CONDITIONING UNITS
Robertson Co., H. H. 115

ENCLOSURES, RADIATOR
Diamond Mfg. Co. 365

ENGINES, GAS, FOR FAN, PUMP AND COMPRESSOR DRIVES
Bell & Gossett Co. 31

EXCHANGERS, HEAT
Bell & Gossett Co. 261
Ellicott-Brandt, Inc. 351
Marlo Coil Co. 111

EXHAUSTERS, WELDING FUME
Barry Blower Co. 274
Gallaher Co., The 127
Quickdraft Co. 384

EXPANDERS, TUBE
Wiedeke Co., The Gustav 387

EXPOSITIONS
15th International Heating & Air-Conditioning Exposition 270

FANS, AXIAL FLOW, PRESSURE TYPE
American-Standard Industrial Div. 39-42
Buffalo Forge Co. 72, 73
Power Line Fan Co., Inc., Subsid. of Chelsea Products, Inc. 68, 69
South Bend Air Products, Inc. 379

FANS, CENTRIFUGAL
Air Motion Research Div., Missile Dynamics Corp. 337
Air Moving & Conditioning Association, Inc. 364
Aladdin Heating Corp. 371
American-Standard Industrial Div. 39-42
Barry Blower Co. 274
Buffalo Forge Co. 72, 73
Champion Blower & Forge Co., Inc. 361
Chicago Blower Corp. 4
Clarage Fan Co. 36, 37
Lau Blower Co. 102
New York Blower Co. 27
Power Line Fan Co., Inc., Subsid. of Chelsea Products, Inc. 68, 69
Trane Co. 70, 71

FANS, MATERIALS HANDLING
American-Standard Industrial Div. 39-42
Barry Blower Co. 274
Buffalo Forge Co. 72, 73
Chicago Blower Corp. 4
Clarage Fan Co. 36, 37
New York Blower Co. 27

FANS, MECHANICAL DRAFT, FOR BOILERS
Barry Blower Co. 274
Chicago Blower Corp. 4
Clarage Fan Co. 36, 37
Lehigh Fan & Blower Div., Fuller Co. 328
Quickdraft Co. 384

FANS, PROPELLER
American-Standard Industrial Div. 39-42
Buffalo Forge Co. 72, 73
Clarage Fan Co. 36, 37
Diehl Mfg. Co. 109
Ilg Electric Ventilating Co. 76, 77
New York Blower Co. 27
Power Line Fan Co., Inc., Subsid. of Chelsea Products, Inc. 68, 69
South Bend Air Products, Inc. 379

FASTENERS, INSULATION
Mid-Continent Screw Products Co. 374
Miracle Adhesives Corp. 256

FILTERS, AIR
Air Filter Institute 391

FILTERS, AIR, AUTOMATIC, DRY
Air Filter Div., American Air Filter Co. 117
Continental Air Filters, Inc. 301
Farr Co. 83-86

FILTERS, AIR, AUTOMATIC, VISCOUS
Continental Air Filters, Inc. 301
Farr Co. 83-86

FILTERS, AIR, ELECTROSTATIC
Air Filter Div., American Air Filter Co. 117

FILTERS, AIR, GREASE
Continental Air Filters, Inc. 301

FILTERS, AIR, HIGH TEMPERATURE
Cambridge Filter Corp. 332

FILTERS, AIR, MANUAL, DRY
Continental Air Filters, Inc. 301

FILTERS, AIR, PANEL, DRY
Air Filter Div., American Air Filter Co. 117
Cambridge Filter Corp. 332
Continental Air Filters, Inc. 301
Farr Co. 83-86
Mine Safety Appliances Co. 317

FILTERS, AIR, PANEL, DRY, SUBMICRON PARTICULATE
Cambridge Filter Corp. 332
Flanders Filters, Inc. 388
Mine Safety Appliances Co. 317

FILTERS, AIR, PANEL, WITH PLASTIC MEDIA
Continental Air Filters, Inc. 301
Stoddard Industries, Inc. 389

FILTERS, AIR, PANEL, VISCOUS
Air Devices, Inc. 82
Continental Air Filters, Inc. 301
Farr Co. 83-86
Mine Safety Appliances Co. 317

FILTERS, AIR, THROW-AWAY
Mine Safety Appliances Co. 317

FILTERS, PIPE LINE
Mine Safety Appliances Co. 317

FILTERS, REFRIGERANT
Henry Valve Co. 101

FITTINGS, COPPER TUBE
Anaconda American Brass Co. 120

FITTINGS, HOT WATER HEATING SYSTEMS, ONE PIPE
Hoffman Specialty Mfg. Corp. 10

FITTINGS, LIFT
Modine Mfg. Co. 78, 79

FITTINGS, PIPE
Anaconda American Brass Co. 120
Babcock & Wilcox Co., Tubular Products Div. 3
Bonney Forge & Tool Works 298
Capitol Mfg. Co., Div. of Harsco Corp. 88
Crane Co. 91
Grinnell Co., Inc. IFC
Hays Mfg. Co. 103, 104
Hoffman Specialty Mfg. Corp. 10
Roberts Co., C. A. 381
Vilter Mfg. Co. 334
Walworth Co. 254, 255

FLANGES, PIPE
Babcock & Wilcox Co., Tubular Products Div. 3
Ritter Pattern & Casting Co., Inc. 393

FURNACES, WARM AIR, FOR INDUSTRIAL AND LARGE BUILDING CENTRAL HEATING
Campbell Heating Co. 314
Hayes Furnace Mfg. & Supply Co. 305
Mammoth Industries, Inc. 291
National Heater Co., Inc. 349
Tjernlund Mfg. Co. 379

GAGES, INDICATING, DRAFT
Dwyer Mfg. Co., F. W. 387

GAGES, INDICATING, PRESSURE
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. 278
Weksler Instruments Corp. 290

GAGES, INDICATING, VACUUM
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. 278

GEAR—MOTORS
Reliance Electric & Engineering Co. 279, 280

GRILLES
A & A Register Co. 308
Air Devices, Inc. 82
Barber-Colman Co. 250, 251
Carnes Corp. 13, 15, 17
Diamond Mfg. Co. 365
General Air Products Corp. 143
Titus Mfg. Corp. 58
Tuttle & Bailey, Div. of Allied Thermal Corp. 245, 246
United States Register Co. 325
Universal Diffuser Corp. 323
Waterloo Register Co., Inc. 123

HANGERS AND SUPPORTS, PIPE
Flexonics Corp., Subsid. of Calumet & Hecla, Inc. 18
Grinnell Co., Inc. IFC
Ritter Pattern & Casting Co. 399
Vibration Mountings, Inc. 248, 249

HEADERS, PIPE, WELDED
Grinnell Co., Inc. IFC

HEATERS, AIR, DIRECT FIRED, COAL
Campbell Heating Co. 314

HEATERS, AIR, DIRECT FIRED, COMBINATION GAS AND OIL
Arkos Mfg. Co. 116
Johnson Heater Corp. 386
Lennox Industries Inc. 74, 75
Mammoth Industries, Inc. 291
National Heater Co., Inc. 349

HEATERS, AIR, DIRECT FIRED, GAS, CENTRIFUGAL FAN TYPE
Arkos Mfg. Co. 116
Campbell Heating Co. 314
Hayes Furnace Mfg. & Supply Co. 305
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp. 121-122
Johnson Heater Corp. 386
Lennox Industries Inc. 74, 75
Mammoth Industries, Inc. 291
Modine Mfg. Co. 78, 79
National Heater Co., Inc. 349
Norman Products Co., Inc. 335
Reznor Mfg. Co. 333
Tjernlund Mfg. Co. 379

Products Advertised in This Issue

HEATERS, AIR, DIRECT FIRED, GAS, PORTABLE, FOR SPACE HEATING

Space-Ray Corp.	288

HEATERS, AIR, DIRECT FIRED, GAS, SUSPENDED TYPE

Arkos Mfg. Co.	116
Lennox Industries Inc.	74, 75
Mammoth Industries, Inc.	291
Modine Mfg. Co.	78, 79
National Heater Co., Inc.	349
Tjernlund Mfg. Co.	379

HEATERS, AIR, DIRECT FIRED, OIL, FLOOR TYPE

Arkos Mfg. Co.	116
Campbell Heating Co.	314
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp.	121-122
Johnson Heater Corp.	386
Lennox Industries Inc.	74, 75
Mammoth Industries, Inc.	291
National Heater Co., Inc.	349
Tjernlund Mfg. Co.	379

HEATERS, AIR, DIRECT FIRED, OIL, SUSPENDED TYPE

Arkos Mfg. Co.	116
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp.	121-122
Johnson Heater Corp.	386
Lennox Industries Inc.	74, 75
Mammoth Industries, Inc.	291
National Heater Co., Inc.	349
Tjernlund Mfg. Co.	379

HEATERS, DUCT, GAS

Hayes Furnace Mfg. & Supply Co.	305
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp.	121-122
Johnson Heater Corp.	386
Lennox Industries Inc.	74, 75
Modine Mfg. Co.	78, 79

HEATERS, DUCT, OIL FIRED

Johnson Heater Corp.	386
Lennox Industries Inc.	74, 75

HEATERS, SUSPENDED, RADIANT, GAS FIRED

Space-Ray Corp.	288

HEATERS, UNIT, ELECTRIC HEATING ELEMENT

Modine Mfg. Co.	78, 79
Nesbitt, Inc., John J.	19-22

HEATERS, UNIT, GAS, PROPELLER FAN TYPE

Airtherm Mfg. Co.	137
American-Standard Industrial Div.	39-42
Grinnell Co., Inc.	IFC
Modine Mfg. Co.	78, 79
Nesbitt, Inc., John J.	19-22
Reznor Mfg. Co.	333

HEATERS, UNIT, STEAM AND HOT WATER, CABINET TYPE

Airtherm Mfg. Co.	137
American-Standard Industrial Div.	39-42
Buffalo Forge Co.	72, 73
McQuay, Inc.	303
Modine Mfg. Co.	78, 79
Nesbitt, Inc., John J.	19-22
Schemenauer Mfg. Corp.	99

HEATERS, UNIT, STEAM AND HOT WATER, CENTRIFUGAL FAN TYPE

American-Standard Industrial Div.	39-42
Buffalo Forge Co.	72, 73
Clarage Fan Co.	36, 37
Modine Mfg. Co.	78, 79
Nesbitt, Inc., John J.	19-22
New York Blower Co.	27
Thermal Engineering Corp.	44, 45, 46, 47

HEATERS, UNIT, STEAM AND HOT WATER, PROPELLER FAN TYPE

Airtherm Mfg. Co.	137
American-Standard Industrial Div.	39-42
Buffalo Forge Co.	72, 73
Clarage Fan Co.	36, 37
Grinnell Co., Inc.	IFC
Modine Mfg. Co.	78, 79
Murray Mfg. Co., D. J.	394
Nesbitt, Inc., John J.	19-22
New York Blower Co.	27

HEATERS, WATER

American-Standard Industrial Div.	39-42
Ellicott-Brandt, Inc.	351
Hydrotherm, Inc.	360
Patterson-Kelley Co., Inc.	95
Smith Co., Inc., H. B.	67

HOSE, FLEXIBLE, METAL, AND FITTINGS

Allied Metal Hose Co.	286, 287
Flexonics Corp., Subsid. of Calumet & Hecla, Inc.	18
Goodall Rubber Co.	281
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co.	107
MetraFlex Co., The	352
Vibration Mountings, Inc.	248, 249

HOSE, NON-METAL, AND FITTINGS

Flexonics Corp., Subsid. of Calumet & Hecla, Inc.	18
Vibration Mountings, Inc.	248, 249

HOUSINGS, FAN

Barry Blower Co.	274

HUMIDIFIERS, CENTRAL PLANT

Walton Laboratories, Inc.	313

HUMIDIFIERS, DIRECT, SPRAY HEAD

Walton Laboratories, Inc.	313

HUMIDIFIERS, UNIT, ROOM TYPE

Rotherm Engineering Co., Inc.	375
Walton Laboratories, Inc.	313

HUMIDISTATS

Walton Laboratories, Inc.	313

HYGROMETERS

Tagliabue Div., Marshalltown Mfg., Inc.	390
Taylor Instrument Companies	375
Weksler Instruments Corp.	290

INDICATOR-CONTROLLERS, RELATIVE HUMIDITY

Taylor Instrument Companies	375
Weksler Instruments Corp.	290

INDICATOR-CONTROLLERS, TEMPERATURE

Sarco Co., Inc.	87
Weksler Instruments Corp.	290

INDICATORS, RELATIVE HUMIDITY

Weksler Instruments Corp.	290

INSULATION, BOILER, TANK AND EQUIPMENT

Owens-Corning Fiberglas Corp.	132, 133

INSULATION, BUILDING

Fibrous Products Div., Union Asbestos & Rubber Co.	118
Owens-Corning Fiberglas Corp.	132, 133

INSULATION, DUCT, SOUND DEADENING

Pittsburgh Plate Glass Co.	35

INSULATION, DUCT, THERMAL

American Engineering Co.	302
Owens-Corning Fiberglas Corp.	132, 133
Pittsburgh Plate Glass Co.	35

INSULATION, FINISHING CEMENT

Fibrous Products Div., Union Asbestos & Rubber Co.	118
Moore, Inc., Goodloe E.	357

INSULATION, PIPE, AND TUBING

Chase & Sons, Inc.	293
Fibrous Products Div., Union Asbestos & Rubber Co.	118
Gustin-Bacon Mfg. Co.	89
Johns-Manville Corp.	52, 53
Owens-Corning Fiberglas Corp.	132, 133
Rubatex Div., Great American Industries, Inc.	391

INSULATION, PIPE, UNDERGROUND

Insul-Fil Co., Inc., Div. of Miracle Adhesives Corp.	150, 151
Owens-Corning Fiberglas Corp.	132, 133
Ric-wiL, Inc.	252
Witco Chemical Co., Inc.	266, 267

JOINTS, PIPE, EXPANSION, FOR BASEBOARD HEATING

Flexonics Corp., Subsid. of Calumet & Hecla, Inc.	18
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co.	107
Modine Mfg. Co.	78, 79

JOINTS, PIPE, EXPANSION, PACKLESS, METAL

Badger Mfg. Co.	30
Flexonics Corp., Subsid. of Calumet & Hecla, Inc.	18
Fulton Sylphon Div., Robertshaw-Fulton Controls Co.	278
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co.	107

JOINTS, PIPE, EXPANSION, PACKLESS, RUBBER

General Rubber Corp.	358
Goodall Rubber Co.	281
Vibration Mountings, Inc.	248, 249

JOINTS, PIPE, EXPANSION, SLIP

Yarnall-Waring Co.	94

JOINTS, PIPE, FLEXIBLE SWING AND REVOLVING

Barco Mfg. Co.	342

KITS, COMBUSTION TESTING

Dwyer Mfg. Co., F. W.	387

LOUVERS FOR OUTDOOR AIR INTAKE OR AIR EXHAUST

A-J Mfg. Co.	383
Imperial Damper Co.	276
Swartwout Fabricators, Inc.	329

LOUVERS AND SHUTTERS, AUTOMATICALLY OR MANUALLY CONTROLLED

Imperial Damper Co.	276
Power Line Fan Co., Inc., Subsid. of Chelsea Products, Inc.	68, 69
Robertson Co., H. H.	115
Swartwout Fabricators, Inc.	329
Tuttle & Bailey, Div. of Allied Thermal Corp.	245, 246

MACHINES, PIPE CUTTING & THREADING

H & M Pipe Beveling Machine Co.	378
Ridge Tool Co.	92

MACHINES, PIPE, FOR WELDING, CUTTING, AND FITTING

H & M Pipe Beveling Machine Co.	378

MACHINES, SHEET METAL, SEAMING, POWER

SPIRO U.S.A., Inc.	383

METERS, AIR VELOCITY, DIRECT READING

Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc.	371
Dwyer Mfg. Co., F. W.	387

METERS, CONDENSATE

Central Station Steam Co.	32

Products Advertised in This Issue

MOTORS, ELECTRIC, FRACTIONAL HP
Century Electric Co. 54, 55
Reliance Electric & Engineering Co. 279, 280
Howell Electric Motors Co. 387, 389

MOTORS, ELECTRIC, 1 HP AND OVER
Century Electric Co. 54, 55
Howell Electric Motors Co. 387, 389
Reliance Electric & Engineering Co. 279, 280

NIPPLES, PIPE
Allied Metal Hose Co. 286, 287

NOISE ELIMINATION FOR COOLING TOWERS
Vibration Mountings, Inc. 248, 249

NOZZLES, ATOMIZING
Monarch Mfg. Works, Inc. 100

NOZZLES, OIL BURNER
Monarch Mfg. Works, Inc. 100

NOZZLES, SPRAY
Binks Mfg. Co. 318
Monarch Mfg. Works, Inc. 100

OILS, FOR COATING VISCOUS AIR FILTERS
Continental Air Filters, Inc. 301

OPERATORS, DAMPER, DUCT
Imperial Damper Co. 276
Johnson Service Co. OBC
Young Regulator Co. 108

OPERATORS, VALVE, HYDRAULIC OR ELECTRIC
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. 278
Johnson Service Co. OBC
Powers Regulator Co. 6, 7

OPERATORS, VALVE, REMOTE, HAND
Babbitt Steam Specialty Co. 362

PACKING, ASBESTOS
Fibrous Products Div., Union Asbestos & Rubber Co. 118

PANELS, PERFORATED, FOR AIR DIFFUSION
General Air Products Corp. 143

PIPE, ALUMINUM
Roberts Co., C. A. 381

PIPE, BRASS AND COPPER
Anaconda American Brass Co. 120
Reading Tube Corp. 259

PIPE, CAST IRON
Duriron Co., Inc., The 145

PIPE, FINNED
Schemenauer Mfg. Corp. 99

PIPE, NICKEL AND NICKEL ALLOY
National Tube Div., United States Steel Corp. 131

PIPE, PRE-INSULATED
Ric-wiL, Inc. 252

PIPE, STEEL
Babcock & Wilcox Co., Tubular Products Div. 3
Bethlehem Steel Co. 93
Committee of Steel Pipe Producers, American Iron and Steel Institute 48, 49
National Supply Div., Armco Steel Corp. 321
National Tube Div., United States Steel Corp. 131
Roberts Co., C. A. 381
Wheatland Tube Co. 126

PLATES, FLOOR AND CEILING
Ritter Pattern & Casting Co., Inc. 393

POSITIONERS, WELDING
Aronson Machine Co. 388

PROTECTORS, PIPE COVERING
Witco Chemical Co., Inc. 266, 267

PULLEYS AND SHEAVES, FOR BELT DRIVES
Wood's Sons Co., T. B. 331

PUMP-MOTOR UNITS, CLOSE COUPLED
Aurora Pump Div., The New York Air Brake Co. 134
Buffalo Forge Co. 72, 73
Ingersoll-Rand Co. 90

PUMPS, BOILER FEED
Aurora Pump Div., The New York Air Brake Co. 134
Buffalo Forge Co. 72, 73
Eagan Co., Walter H. 25
Frederick Iron & Steel, Inc. 350
Skidmore Corp. 253
Weinman Pump Mfg. Co., The 296

PUMPS, CENTRIFUGAL
Aurora Pump Div., The New York Air Brake Co. 134
Bell & Gossett Co. 31
Buffalo Forge Co. 72, 73
Fairbanks, Morse & Co. 345
Frederick Iron & Steel, Inc. 350
Hoffman Specialty Mfg. Corp. 10
Ingersoll-Rand Co. 90
Skidmore Corp. 253
Taco Heaters, Inc. 341

PUMPS, CONDENSATE RETURN
Aurora Pump Div., The New York Air Brake Co. 134
Buffalo Forge Co. 72, 73
Eagan Co., Walter H. 25
Hoffman Specialty Mfg. Corp. 10
Skidmore Corp. 253
Sterling, Inc. 381
Weinman Pump Mfg. Co., The 296

PUMPS, FIRE
Frederick Iron & Steel, Inc. 350

PUMPS, LIQUID REFRIGERANT CIRCULATING
Buffalo Forge Co. 72, 73

PUMPS, PROPORTIONING
Eagan Co., Walter H. 25

PUMPS, SEWAGE AND SLUDGE
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp. 312
Eagan Co., Walter H. 25
Weil Pump Co. 355

PUMPS, SUMP
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp. 312
Frederick Iron & Steel, Inc. 350
Weil Pump Co. 355

PUMPS, TURBINE TYPE
Aurora Pump Div., The New York Air Brake Co. 134
Eagan Co., Walter H. 25
Skidmore Corp. 253

PUMPS, VACUUM
Skidmore Corp. 253

PUMPS, VACUUM HEATING
Nash Engineering Co. 152
Skidmore Corp. 253

PUMPS, VISCOUS LIQUIDS AND HEAVY MATERIALS
Buffalo Forge Co. 72, 73

RADIATION, BASEBOARD, NON-FERROUS
Modine Mfg. Co. 78, 79
Nesbitt, Inc., John J. 19-22
Shaw-Perkins Mfg. Co. 377

RADIATION, CONVECTION TYPE, ELECTRIC HEATING ELEMENT
Nesbitt, Inc., John J. 19-22

RADIATION, CONVECTION TYPE, FERROUS
Murray Mfg. Co., D.J. 394
Shaw-Perkins Mfg. Co. 377

RADIATION, CONVECTION TYPE, NON-FERROUS
Airtherm Mfg. Co. 137
Modine Mfg. Co. 78, 79
Nesbitt, Inc., John J. 19-22
Schemenauer Mfg. Corp. 99
Shaw-Perkins Mfg. Co. 377

RADIATION, DIRECT
Murray Mfg. Co., D. J. 394

RADIATION, FIN TUBE TYPE
Modine Mfg. Co. 78, 79
Schemenauer Mfg. Corp. 99

REAMERS, PIPE
Ridge Tool Co. 92

RECORDER-CONTROLLERS, COMBINED TEMPERATURE AND HUMIDITY
Weksler Instruments Corp. 290

RECORDER-CONTROLLERS, HUMIDITY
Weksler Instruments Corp. 290

RECORDER-CONTROLLERS, PRESSURE
Weksler Instruments Corp. 290

RECORDER-CONTROLLERS, TEMPERATURE
Weksler Instruments Corp. 290

RECORDERS, COMBINED TEMPERATURE AND HUMIDITY
Weksler Instruments Corp. 290

RECORDERS, HUMIDITY
Weksler Instruments Corp. 290

RECORDERS, TEMPERATURE
Moeller Instrument Co. 356
Palmer Thermometers, Inc. 348
Weksler Instruments Corp. 290

REDUCERS AND INCREASERS, SPEED
Reliance Electric & Engineering Co. 279, 280

REFRIGERANTS
Allied Chemical Corp., General Chemical Div. 315
Pennsylvania Engineering Co. 306

REGISTERS
A & A Register Co. 308
Carnes Corp. 13, 15, 17
General Air Products Corp. 143
Independent Register Co. 292
Titus Mfg. Corp. 58
Tuttle & Bailey, Div. of Allied Thermal Corp. 245, 246
United States Register Co. 325
Universal Diffuser Corp. 323
Waterloo Register Co., Inc. 123

Products Advertised in This Issue

REGULATORS, DAMPER SETS
Young Regulator Co. ... 108

REGULATORS, LEVEL, LIQUID
Magnetrol, Inc. ... 377
McDonnell & Miller, Inc. ... 294

REGULATORS, PRESSURE, AIR
Allen-Bradley Co. ... 269
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. ... 278
Young Regulator Co. ... 108

REGULATORS, PRESSURE, GAS
Allen-Bradley Co. ... 269
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. ... 278

REGULATORS, PRESSURE, LIQUID
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. ... 278
McDonnell & Miller, Inc. ... 294

REGULATORS, TEMPERATURE
Allen-Bradley Co. ... 269
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. ... 278
Hoffman Specialty Mfg. Corp. ... 10
Sarco Co., Inc. ... 87
Sterling, Inc. ... 381

RELAYS, ELECTRICAL
Allen-Bradley Co. ... 269
Arrow-Hart & Hegeman Electric Co. ... 300

RELAYS, PNEUMATIC
Johnson Service Co. ... OBC

RINGS, BACKING FOR PIPE WELDING
Robvon Backing Ring Co. ... 354

SCOOPS, AIR, FOR DEFLECTING FLOW IN DUCTS
General Air Products Corp. ... 143

SCREWS, SHEET METAL
Mid-Continent Screw Products Co. ... 374

SEALS, TERMINAL, FOR COMPRESSORS
Henry Valve Co. ... 101

SEPARATORS, BLOWDOWN
Wilson Engineering Corp. ... 382

SHAFTS, FLEXIBLE, FOR CONTROL
H & M Pipe Beveling Machine Co. ... 378

SHEETS, STEEL
Bethlehem Steel Co. ... 16

SOLENOIDS AND SOLENOID COILS
Allen-Bradley Co. ... 269

SOLVENT, PENETRANT, FOR LOOSENING SCALE AND THREADED JOINTS
Tankit Co., The ... 392

STANDS, PIPE VISE
Reed Mfg. Co. ... 284

STOCKS AND DIES
Ridge Tool Co. ... 92

STOKERS, INDUSTRIAL AND COMMERCIAL
Will-Burt Co., The ... 23

STRAINERS, PIPE LINE
Hays Mfg. Co. ... 103, 104
Henry Valve Co. ... 101
Hoffman Specialty Mfg. Corp. ... 10
Modine Mfg. Co. ... 78, 79
Monarch Mfg. Works, Inc. ... 100
Riggio Co., Inc., Frank D. ... 391
Sarco Co., Inc. ... 87
Sterling, Inc. ... 381

STRAINERS, REFRIGERANT, LIQUID LINE
Alco Valve Co. ... 273

SURFACE, FINNED, COOLING
Aerofin Corp. ... 50, 51
American-Standard Industrial Div. ... 39-42
Halstead & Mitchell ... 97
Marlo Coil Co. ... 111
Nesbitt, Inc., John J. ... 19-22
Temtrol, Inc. ... 390
Thermal Engineering Corp. ... 44, 45, 46, 47
Trane Co. ... 70, 71

SURFACE, FINNED, HEATING
Aerofin Corp. ... 50, 51
American-Standard Industrial Div. ... 39-42
Halstead & Mitchell ... 97
Marlo Coil Co. ... 111
Murray Mfg. Co., D. J. ... 394
Nesbitt, Inc., John J. ... 19-22
Temtrol, Inc. ... 390
Thermal Engineering Corp. ... 44, 45, 46, 47
Trane Co. ... 70, 71

SURFACE FINNED, HEATING AND COOLING, PRE-ASSEMBLED, INCLUDING COILS, ELIMINATOR PLATES, SETTLING TANK, AND CASING
Clarage Fan Co. ... 36, 37

SWITCHES, ELECTRICAL
Allen-Bradley Co. ... 269
Arrow-Hart & Hegeman Electric Co. ... 300
McDonnell & Miller, Inc. ... 294

SWITCHES, FLOAT, REFRIGERATION
Alco Valve Co. ... 273

SWITCHES, FLOW
Hays Mfg. Co. ... 103, 104
McDonnell & Miller, Inc. ... 294, 295

SWITCHES, LIQUID LEVEL
Alco Valve Co. ... 273
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp. ... 312
McDonnell & Miller, Inc. ... 294

SWITCHES, PNEUMATIC
Johnson Service Co. ... OBC

SWITCHES, TIME
Allen-Bradley Co. ... 269
Minneapolis-Honeywell Regulator Co. ... 138, 139

SYSTEMS, HEATING AND VENTILATING, GAS OR OIL FIRED, WARM AIR FOR SCHOOL CLASSROOMS
American Gas Association ... 124, 125
Lennox Industries Inc. ... 74, 75, 124, 125
Norman Products Co., Inc. ... 335

SYSTEMS, HEATING, ZONE CONTROL
Minneapolis-Honeywell Regulator Co. ... 138, 139

SYSTEMS, HOT GAS DEFROSTING, FOR REFRIGERATION
Dole Refrigerating Co. ... 392

SYSTEMS, ROOF SPRAYING
Muellermist Irrigation Co. ... 376
Ruppright's Rotary Roof Cooler ... 392

TANKS, PROCESS AND STORAGE
Ellicott-Brandt, Inc. ... 351

TAPE, DUCT, ADHESIVE, FOR SEALING JOINTS
Miracle Adhesives Corp. ... 256

TESTERS, SMOKE
Dwyer Mfg. Co., F. W. ... 387

THERMOMETERS, INDICATING, INDUSTRIAL
Moeller Instrument Co. ... 356
Palmer Thermometers, Inc. ... 348
Tagliabue Div., Marshalltown Mfg., Inc. ... 390
Weksler Instruments Corp. ... 290

THERMOMETERS, INDICATING, REMOTE-READING
Moeller Instrument Co. ... 356
Palmer Thermometers, Inc. ... 348
Trerice Co., H. O. ... 389
Weksler Instruments Corp. ... 290

THERMOMETERS, INDICATING, WALL
Moeller Instrument Co. ... 356
Weksler Instruments Corp. ... 290

THERMOSTATS, ROOM OR WALL
Barber-Colman Co. ... 250, 251
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. ... 278
Johnson Service Co. ... OBC
Minneapolis-Honeywell Regulator Co. ... 138, 139

TOWERS, COOLING, ATMOSPHERIC DRAFT
Binks Mfg. Co. ... 318

TOWERS, COOLING, MECHANICAL DRAFT
Acme Industries, Inc. ... 258
American-Standard Industrial Div. ... 39-42
Baltimore Aircoil Co., Inc. ... 265
Binks Mfg. Co. ... 318
Fiske Co. ... 310
Fluor Products Co. ... 297
Halstead & Mitchell ... 97
Havens Cooling Towers, Div. of Havens Structural Steel Co. ... 283
Phillips Cooling Tower Co., Inc. ... 80, 81

TRANSMITTERS, PRESSURE AND TEMPERATURE
Taylor Instrument Companies ... 375

TRAPS, STEAM, FLOAT-THERMOSTATIC
Anderson Co., V. D. ... 338
Armstrong Machine Works ... 260
Hoffman Specialty Mfg. Corp. ... 10
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp. ... 343
Modine Mfg. Co. ... 78, 79
Sarco Co., Inc. ... 87
Sterling, Inc. ... 381

TRAPS, STEAM, LIFT
Sarco Co., Inc. ... 87

TRAPS, STEAM, MECHANICAL
Anderson Co., V. D. ... 338
Armstrong Machine Works ... 260
Hoffman Specialty Mfg. Corp. ... 10
Sarco Co., Inc. ... 87

TRAPS, STEAM, PUMPING
Sarco Co., Inc. ... 87

TRAPS, STEAM, RADIATOR
Hoffman Specialty Mfg. Corp. ... 10
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp. ... 343
Modine Mfg. Co. ... 78, 79
Sarco Co., Inc. ... 87
Sterling, Inc. ... 381

TRAPS, STEAM, THERMOSTATIC
Anderson Co., V. D. ... 338
Hoffman Specialty Mfg. Corp. ... 10
Modine Mfg. Co. ... 78, 79

Products Advertised in This Issue

Riggio Co., Inc., Frank D.	391
Sarco Co., Inc.	87
Sterling, Inc.	381

TREATMENT, WATER, TO INHIBIT CORROSION

Oakite Products, Inc.	380
Virginia Smelting Co.	33

TREATMENT, WATER, TO PREVENT SCALE FORMATION

Oakite Products, Inc.	380
Virginia Smelting Co.	33

TREATMENT, WATER, FOR SLIME AND ALGAE CONTROL

Oakite Products, Inc.	380
Virginia Smelting Co.	33

TUBES, CONDENSER

Babcock & Wilcox Co., Tubular Products Div.	3

TUBES, PITOT

Dwyer Mfg. Co., F. W.	387

TUBING

Allied Metal Hose Co.	286, 287
Anaconda American Brass Co.	120
Babcock & Wilcox Co., Tubular Products Div.	3
Flexible Tubing Corp.	275
Moore & Co., Samuel	105
Phelps Dodge Copper Products Corp.	247
Reading Tube Corp.	259
Roberts Co., C. A.	381
Schemenauer Mfg. Corp.	99
Wheatland Tube Co.	126

UNIONS, MALLEABLE, BRASS SEAT

Fairbanks Co., The	324

UNIONS, STEEL

Capitol Mfg. Co., Div. of Harsco Corp.	88

UNITARY AIR CONDITIONERS, CENTRAL STATION TYPE

Acme Industries, Inc.	258
Air Conditioning, Inc.	128, 129
Air Conditioning Industries, Inc.	370
Air & Refrigeration Corp.	368
American-Standard Industrial Div.	39-42
Buffalo Forge Co.,	72, 73
Clarage Fan Co.	36, 37
Engineered Air Systems Div., American Air Filter Co.	319
Governair Corp.	272
Mammoth Industries, Inc.	291
Nesbitt, Inc., John J.	19-22
Temtrol, Inc.	390
Thermal Engineering Corp.	44, 45, 46, 47
Trane Co.	70, 71
Typhoon Air Conditioning Co., Div. of Hupp Corp.	327
Vilter Mfg. Co.	334

UNITARY AIR CONDITIONERS, HORIZONTAL PACKAGE TYPE

Acme Industries, Inc.	258
Air Conditioning, Inc.	128, 129
Air Conditioning Industries, Inc.	370
Air & Refrigeration Corp.	368
American-Standard Industrial Div.	39-42
Buffalo Forge Co.	72, 73
Clarage Fan Co.	36, 37
Engineered Air Systems Div., American Air Filter Co.	319
Governair Corp.	272
Nesbitt, Inc., John J.	19-22
Temtrol, Inc.	390
Thermal Engineering Corp.	44, 45, 46, 47
Trane Co.	70, 71
Typhoon Air Conditioning Co., Div. of Hupp Corp.	327
United Electric Co.	373
Vilter Mfg. Co.	334

UNITARY AIR CONDITIONERS, INDUSTRIAL TYPE

Air & Refrigeration Corp.	368
American-Standard Industrial Div.	39-42
Buffalo Forge Co.	72, 73
Clarage Fan Co.	36, 37
Engineered Air Systems Div., American Air Filter Co.	319
Nesbitt, Inc., John J.	19-22
Surface Combustion Corp.	282
Thermal Engineering Corp.	44, 45, 46, 47

UNITARY AIR CONDITIONERS, SUMMER, ROOM TYPE, FLOOR CABINET, REMOTE COMPRESSOR OR COLD WATER, UNDER 36,000 BTU PER HR CAPACITY

Acme Industries, Inc.	258
Chrysler Corp., Airtemp Div.	147
Fedders Corp., Heating Div.	326
McQuay, Inc.	303
Trane Co.	70, 71
United Electric Co.	373
U. S. Air Conditioning Corp.	365

UNITARY AIR CONDITIONERS, SUMMER, STORE TYPE, FLOOR CABINET

American-Standard Industrial Div.	39-42
Chrysler Corp., Airtemp Div.	147
Lennox Industries Inc.	74, 75
Typhoon Air Conditioning Co., Div. of Hupp Corp.	327

UNITARY AIR CONDITIONERS, WINTER, ROOM TYPE, FLOOR CABINET

McQuay, Inc.	303
Trane Co.	70, 71
U. S. Air Conditioning Corp.	365

UNITARY AIR CONDITIONERS, YEAR AROUND, FAN-COIL TYPE FOR INSTALLATION WITH OR WITHOUT CABINET IN ROOM OR IN CLOSET SPACE, OVER CORRIDOR, ETC.

Kritzer Products Div., Peerless of America, Inc.	385
McQuay, Inc.	303
Thermal Engineering Corp.	44, 45, 46, 47
Typhoon Air Conditioning Co., Div. of Hupp Corp.	327
U. S. Air Conditioning Corp.	365

UNITARY AIR CONDITIONERS, YEAR AROUND, HEAT PUMP

Typhoon Air Conditioning Co., Div. of Hupp Corp.	327

UNITARY AIR CONDITIONERS, YEAR AROUND, ROOM TYPE, FLOOR CABINET

Air & Refrigeration Corp.	368
Airtherm Mfg. Co.	137
Kritzer Products Div., Peerless of America, Inc.	385
McQuay, Inc.	303
Modine Mfg. Co.	78, 79
Nesbitt, Inc., John J.	19-22
Thermal Engineering Corp.	44, 45, 46, 47
U. S. Air Conditioning Corp.	365

UNITARY AIR CONDITIONERS, YEAR AROUND, ROOM TYPE, FLOOR CABINET, INDUCTION

American-Standard Industrial Div.	39-42

UNITS, EXHAUSTER, CENTRIFUGAL FAN

Ammerman Co., Inc.	346
Barry Blower Co.	274
Buffalo Forge Co.	72, 73
Nesbitt, Inc., John J.	19-22
Power Line Fan Co., Inc., Subsid. of Chelsea Products, Inc.	68, 69
Quickdraft Co.	384
Reznor Mfg. Co.	333

UNITS, FUEL OIL, HEATING, PUMPING AND STRAINING

Eagan Co., Walter H.	25

UNITS, HEATING AND VENTILATING, HORIZONTAL PACKAGE TYPE

American-Standard Industrial Div.	39-42
Buffalo Forge Co.	72, 73
Engineered Air Systems Div., American Air Filter Co.	319
Mammoth Industries, Inc.	291
Nesbitt, Inc., John J.	19-22
New York Blower Co.	27
Temtrol, Inc.	390
Thermal Engineering Corp.	44, 45, 46, 47

UNITS, MAKEUP AIR, HEATING AND VENTILATING, HORIZONTAL PACKAGE TYPE, DIRECT FIRED, GAS OR OIL

Mammoth Industries, Inc.	291
National Heater Co., Inc.	349

UNITS, MAKEUP AIR, HEATING AND VENTILATING, HORIZONTAL PACKAGE TYPE, STEAM OR HOT WATER

Airtherm Mfg. Co.	137

UNITS, MIXING SOUND AND VOLUME CONTROL, FOR DOUBLE DUCT HIGH VELOCITY AIR CONDITIONING SYSTEMS

Air Devices, Inc.	82
Buensod-Stacey Corp.	38
Carnes Corp.	13, 15, 17
Tuttle & Bailey, Div. of Allied Thermal Corp.	245, 246

VALVES, AUTOMATIC SHUTOFF WITH MANUAL RESET

Everlasting Valve Co.	271

VALVES, BALL TYPE

R-P & C Valve Div., American Chain & Cable Co., Inc.	140

VALVES, BLOW-OFF

Everlasting Valve Co.	271

VALVES, BUTTERFLY

Rockwell Co., W. S.	348

VALVES, CHECK

Chatleff Valve & Mfg. Co.	130
Combination Pump Valve Co.	389
Crane Co.	91
Henry Valve Co.	101
Jenkins Bros.	262
Lunkenheimer Co.	106
Miller Valve Co., Inc.	114
Ohio Brass Co.	113
Williams Gauge Co., Inc.	350

VALVES, CYLINDER OPERATED

Everlasting Valve Co.	271

VALVES, DIAPHRAGM

Fulton Sylphon Div., Robertshaw-Fulton Controls Co.	278
Henry Valve Co.	101
Modine Mfg. Co.	78, 79

VALVES, FIRE PROTECTION, SPRINKLER SYSTEM CONTROL

Everlasting Valve Co.	271

VALVES, FLOAT

Alco Valve Co.	273
Hoffman Specialty Mfg. Corp.	10

VALVES, FLOW CONTROL, FOR HOT WATER HEATING SYSTEMS

Hays Mfg. Co.	103, 104

VALVES, GATE

Crane Co.	91
Everlasting Valve Co.	271
Jenkins Bros.	262
Kennedy Valve Mfg. Co.	363
Lunkenheimer Co.	106
Ohio Brass Co.	113
Roberts Co., C. A.	381
Walworth Co.	254, 255

VALVES, GLOBE

Crane Co.	91
Grinnell Co., Inc.	IFC
Jenkins Bros.	262
Kennedy Valve Mfg. Co.	363
Lunkenheimer Co.	106
Ohio Brass Co.	113

VALVES, MIXING, HOT & COLD WATER

Fulton Sylphon Div., Robertshaw-Fulton Controls Co.	278
Powers Regulator Co.	6, 7
Wilson Engineering Corp.	382

Products Advertised in This Issue

VALVES, MOTOR OPERATED
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. 278

VALVES, NEEDLE
Jenkins Bros. 262

VALVES, NON-RETURN
Lunkenheimer Co. 106

VALVES, PACKLESS
Henry Valve Co. 101

VALVES, PILOT OPERATED
Alco Valve Co. 273

VALVES, PLASTIC
Lunkenheimer Co. 106

VALVES, PLUG
Continental Mfg. Co. 373
Crane Co. 91

VALVES, PRESSURE REDUCING AND REGULATING
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. 278
Hoffman Specialty Mfg. Corp. 10

VALVES, QUICK OPENING
Everlasting Valve Co. 271

VALVES, RADIATOR, AIR
Hoffman Specialty Mfg. Corp. 10
Marsh Instrument Co., Div of Colorado Oil & Gas Corp. 343

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL
Fulton Sylphon Div., Robertshaw-Fulton Controls Co. 278
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp. 343
Sterling, Inc. 381

VALVES, RADIATOR, STEAM AND HOT WATER
Medine Mfg. Co. 78, 79
Ohio Brass Co. 113
Sterling, Inc. 381

VALVES, REFRIGERATION
Alco Valve Co. 273
Henry Valve Co. 101
Jackes-Evans Mfg. Co., Controls Div. 110
Sporlan Valve Co. 24
Vilter Mfg. Co. 334

VALVES, RELIEF, HOT WATER
McDonnell & Miller, Inc. 294

VALVES, SOLDER JOINT
Jenkins Bros. 262

VALVES, SOLENOID
Alco Valve Co. 273
Chatleff Valve & Mfg. Co. 130
General Control Co. 309
Hays Mfg. Co. 103, 104
Jackes-Evans Mfg. Co., Controls Div. 110

VALVES, STEAM-JACKETED
Everlasting Valve Co. 271

VALVES, SWITCHING, HEAT PUMP
Alco Valve Co. 273
Chatleff Valve & Mfg. Co. 130

VALVES, 2, 3 and 4 WAY
Chatleff Valve & Mfg. Co. 130
Continental Mfg. Co. 373

VENTILATORS, ROOF, FAN
American-Standard Industrial Div. 39, 42
Ammerman Co., Inc. 346
Buffalo Forge Co. 72, 73
Carnes Corp. 13, 15, 17
Clarage Fan Co. 36, 37
Cook Co., Loren 372
Davidson Fan Co. 304
Diehl Mfg. Co. 109
Gallaher Co., The 127
Jenn-Air Products Co. 285
New York Blower Co. 27
Octagon Ventilator Mfg. Co. 311
Penn Ventilator Co. 43
Power Line Fan Co., Inc., Subsid. of Chelsea Products, Inc. 68, 69
Swartwout Fabricators, Inc. 329
Western Engineering & Mfg. Co. 369

VENTILATORS, ROOF, WITH FUSIBLE LINKS, FOR VENTING PRODUCTS OF COMBUSTION
Swartwout Fabricators, Inc. 329
Western Engineering & Mfg. Co. 369

VENTILATORS, ROOF, GRAVITY
Carnes Corp. 13, 15, 17
Kilbury Mfg. Co. 392
Octagon Ventilator Mfg. Co. 311
Penn Ventilator Co. 43
Swartwout Fabricators, Inc. 329
Western Engineering & Mfg. Co. 369

VENTILATORS, UNIT, ELECTRIC HEATING ELEMENT
Nesbitt, Inc., John J. 19-22

VENTILATORS, UNIT, HOT WATER AND STEAM
Nesbitt, Inc., John J. 19-22
Schemenauer Mfg. Corp. 99

VENTILATORS, WALL, FAN
Buffalo Forge Co. 72, 73
Carnes Corp. 13, 15, 17
Cook Co., Loren 372
Diehl Mfg. Co. 109
Gallaher Co., The 127
Ilg Electric Ventilating Co. 76, 77
Power Line Fan Co., Inc., Subsid. of Chelsea Products, Inc. 68, 69

VENTS, RELIEF, AND INTAKE AIR
Swartwout Fabricators, Inc. 329

VISES, PIPE
Reed Mfg. Co. 284

VOLTMETERS
Pyramid Instrument Corp. 289

WASHERS, AIR
American-Standard Industrial Div. 39-42
Clarage Fan Co. 36, 37

WASHERS, FUME
Buffalo Forge Co. 72, 73

WELDERS, ARC
Lincoln Electric Co. 56, 57

WELLS, THERMOMETER
Moeller Instrument Co. 356

WHEELS, BLOWER
Barry Blower Co. 274
Lau Blower Co. 102

WRENCHES, CHAIN, PIPE
Reed Mfg. Co. 284

DIRECTORY SECTION
HEATING, PIPING, AND AIR CONDITIONING EQUIPMENT FOR INDUSTRIAL AND ALL OTHER LARGE BUILDINGS
PART 2—ALL PRODUCTS CLASSIFIED

For Complete Addresses See Part 4, p. 163d

ABSORBERS, SHOCK, LIQUID, TO ELIMINATE WATER HAMMER IN PIPING
American Tube & Controls, Inc., West Warwick, R. I.
Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.
Beacon Brass Co., Waltham, Mass.
Bernstrom, Inc., C. R., Providence, R. I.
Campbell Mfg. Co., Inc., Boyertown, Pa.
Defender Instrument & Regulator Co., Boody, Ill.
Dormont Mfg. Co., Pittsburgh, Pa.
Elcen Metal Products Co., Franklin Park, Ill.
Finn & Co., Inc., T. R., Hawthorne, N. J.
General Fittings Co., East Greenwich, R. I.
General Rubber Corp., Tenafly, N. J.
Greer Hydraulics, Inc., Los Angeles, Calif.
Hoffman Specialty Mfg. Corp., Indianapolis.
Josam Manufacturing Co., Michigan City, Ind.
Kam Products Corp., Brooklyn, N. Y.
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co., San Francisco, Calif.
Manufacturers Corp., Mansfield, O.
Packless Metal Hose, Inc., Mt. Vernon, N. Y.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Techniflex Div., Port Jervis, N. Y.
United Metal Hose Co., Inc., Long Island City, N. Y.
Vibration Mountings & Controls, Inc., Corona, N. Y.
Wade Mfg. Co., Elgin, Ill.
Zurn Industries, Inc., Erie, Pa.

ABSORBERS, SOUND, DUCT SECTION, PREFABRICATED, FOR NOISE CONTROL IN DUCT SYSTEMS
American Engineering Co., Kansas City, Mo.
Celotex Corp., The, Chicago, Ill.
Elof Hansson, Inc., Acoustical Div., New York, N. Y.
General Sound Control, Inc., Hollydale, Calif.
Industrial Acoustics Co., Inc., New York.
Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Co., Baltimore.
Insul-Coustic, Inc., Maspeth, L. I., N. Y.
Korfund Co., Inc., Westbury, L.I., N. Y.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Midwest Noise Control, Indianapolis, Ind.
Owens-Corning Fiberglas Corp., New York, N. Y.
Silence, Inc., Farmingdale, N. Y.
Sound-Control Products Co., San Francisco, Calif.
Sound Reduction Corp., East Hartford, Conn.
United Sheet Metal Co., Inc., Columbus, O.

ABSORBERS, VIBRATION
See Hose, Flexible, Metal and Fittings; Bases Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type; Connectors, Duct, Flexible

ABSORBERS, VIBRATION, FOR REFRIGERANT AND OTHER PIPE LINES
Allied Metal Hose Co., Long Island City, N. Y.
Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn. (vibration eliminators)
Atlantic Metal Hose Co., Inc., New York, N. Y.
Blaw Knox Co., Power Piping Div., Pittsburgh, Pa.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Dormont Mfg. Co., Pittsburgh, Pa.
Fabreeka Products Co., Inc., Boston, Mass.
Finn & Co., Inc., T. R., Hawthorne, N. J.
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
General Rubber Corp., Tenafly, N. J.
Johnson Metal Hose, Inc., Waterbury, Conn.
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co., San Francisco, Calif.
Korfund Co., Inc., Westbury, L. I., N. Y.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
MB Electronics, New Haven, Conn.
MetraFlex Co., The, Skokie, Ill.
Mulconroy Co., Philadelphia, Pa.
Packless Metal Hose, Inc., Mt. Vernon, N. Y.
Pennsylvania Flexible Metallic Tubing Co., Paoli, Pa.
RKL Controls, Inc., Hainesport, N. J.
Resistoflex Corp., Roseland, N. J.
Saussé & Co., M.W., Los Angeles, Calif.
Seamlex Co., Inc., Long Island City, N. Y.
Techniflex Div., Port Jervis, N. Y.
Titeflex, Inc., Springfield, Mass.
United Metal Hose Co., Inc., Long Island City, N. Y.
United States Rubber Co., New York, N. Y.
Universal Metal Hose Co., Chicago, Ill.
Vibration Mountings & Controls, Inc., Corona, N. Y.
Wade Mfg. Co., Elgin, Ill.
Williamson Co., The, Cincinnati, O.

ABSORPTION DEHUMIDIFIERS
See Dehumidifiers, Absorption and Adsorption

ABSORPTION REFRIGERATION MACHINES
See Machines, Refrigeration, Absorption

ACCESS DOORS AND PANELS
See Doors and Panels, Access

ACCUMULATORS, REFRIGERATION (FOR AIR CONDITIONING)
Bohn Aluminum & Brass Corp., Detroit.
Dean Products, Inc., Brooklyn, N. Y.
Dole Refrigerating Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Greer Hydraulics, Inc., Los Angeles, Calif.
Kenmore Machine Products, Inc., Lyons, N. Y.
Mitchell Co., John E., Dallas, Tex.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Phillips & Co., H. A., Chicago, Ill.
Reco Products Div., Recony Corp., New York, N. Y.
Refrigeration Research, Inc., Brighton, Mich.
Remco, Inc., Zelienople, Pa.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Vilter Mfg. Co., The, Milwaukee, Wis.
Wabash Corp., Chicago, Ill.
Watkins Co., J. E., Maywood, Ill.
Watsco, Inc., Hialeah, Fla.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Wolverine Tube, Div. of Calumet & Helca, Inc., Allen Park, Mich.
XL Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.

ACOUSTICAL TREATMENT FOR DUCTS
See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Insulation, Duct, Sound Deadening

ADHESIVES, FOR INSULATION OTHER THAN PIPE
Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Adhesive Products Corp., New York, N. Y.
Armstrong Contracting & Supply Corp., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Arno Adhesive Tapes, Inc., Michigan City, Ind.
Bostik Adhesives, BB Chemical Co., Subsid. of United Shoe Machinery Corp., Cambridge, Mass.
Cain Mfg. Inc., Birmingham, Ala.
Capac Mfg. Corp., Capac, Mich.
Carey Mfg. Co., Philip, Cincinnati, O. (fibrous)
Chemical Coatings & Engineering Co., Media, Pa.
Columbia Cement Co., Inc., Brooklyn, N. Y.
Cordo Chemical Corp., Norwalk, Conn.
Dennis Chemical Co., St. Louis, Mo.
Dow Corning Corp., Midland, Mich.
Durkee-Atwood Co., Minneapolis, Minn.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Eagle-Picher Co., Cincinnati, O.
Flintkote Co., The, New York, N. Y.
Formica Corp., The, Cincinnati, O.
Forty-Eight Insulations, Inc., Aurora, Ill.
Foster Co., Benjamin, Philadelphia, Pa.
Fuller Co., H. B., St. Paul, Minn.
Gilbreth Co., The, Philadelphia, Pa. (Teflon)
Goodrich Industrial Products Co., B. F., Akron, O.
Grant Wilson, Inc., Chicago, Ill.
Insul-Coustic, Inc., Maspeth, Long Island, N. Y.
Johns-Manville Corp., New York, N. Y.
Minnesota Mining & Mfg. Co., Adhesives, Coatings & Sealers Div., St. Paul, Minn.
Miracle Adhesives Corp., Bellmore, N. Y.
Moore Inc., Goodloe E., Danville, Ill.
National Cork Co., Englewood, N. J.
Permacel, New Brunswick, N. J.
Permatex Co., Inc., Long Island, N. Y.
Presstite Div., American-Marietta Co., St. Louis, Mo.
Raybestos-Manhattan, Inc., Passaic, N. J.
Rubber & Asbestos Corp., Bloomfield, N. J.
Schwartz Chemical Co., Inc., Long Island City, N. Y.
Silvercote Products, Inc., Chicago, Ill.
St. Clair Rubber Co., Detroit, Mich.
Stic-Klip Mfg. Co., Inc., Cambridge, Mass.
Swift & Co., Adhesive Products Dept., Chicago, Ill.
Taft Jenkins Co., Inc., Holyoke, Mass.
Williamson Adhesives, Inc., Skokie, Ill.
Xylos Rubber Co., Akron, O.

ADHESIVES, FOR PIPE COVERING
Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Adhesive Products Corp., New York, N. Y.
Arabol Mfg. Co., New York, N. Y.
Armstrong Contracting & Supply Corp., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Arno Adhesive Tapes, Inc., Michigan City, Ind.
Asbestos Asphalt Insulation Co., Chicago, Ill.
Bostik Adhesives, BB Chemical Co., Subsid. of United Shoe Machinery Corp., Cambridge, Mass.
Cain Mfg. Inc., Birmingham, Ala.
Capac Mfg. Corp., Capac, Mich.
Carey Mfg. Co., Philip, Cincinnati, O.
Chemical Coatings & Engineering Co., Media, Pa.
Columbia Cement Co., Inc., Brooklyn, N. Y.

Cordo Chemical Corp., Norwalk, Conn.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Flintkote Co., The, New York, N. Y.
Foster Co., Benjamin, Philadelphia, Pa.
Glo-Brite Products Inc., Chicago, Ill.
Goodrich Industrial Products Co., B. F., Akron, O.
Grant Wilson, Inc., Chicago, Ill.
Industrial Laminates Div., Fabric Distributing Co., New York, N. Y.
Insul-Coustic, Inc., Maspeth, L. I., N. Y.
Johns-Manville Corp., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Minnesota Mining & Mfg. Co., Adhesives, Coatings & Sealers Div., St. Paul, Minn.
Miracle Adhesives Corp., Bellmore, N. Y.
Moore Inc., Goodloe E., Danville, Ill.
Mundet Cork Corp., North Bergen, N. J.
National Cork Co., Englewood, N. J.
Pecora Inc., Philadelphia, Pa.
Permacel, New Brunswick, N. J.
Permatex Co., Inc., Long Island, N. Y.
Presstite Div., American-Marietta Co., St. Louis, Mo.
Ramick Inc., Bethel Park, Pa.
Rubber & Asbestos Corp., Bloomfield, N. J.
Ruberoid Co., New York, N. Y.
St Clair Rubber Co., Detroit, Mich.
Sauereisen Cements Co., Pittsburgh, Pa.
Schwartz Chemical Co., Inc., Long Island City, N. Y.
Sci-eff-ec Labs., Chagrin Falls, O.
Standard Asbestos Mfg. Co., Chicago, Ill.
Swift & Co., Chicago, Ill.
Taft Jenkins Co., Inc., Holyoke, Mass.
Tropical Tape Div., Fort Lauderdale, Fla.
Xylos Rubber Co., Akron, O.

ADSORBERS, ODOR, FOR DUCT SYSTEMS

Atlantic Ultraviolet Co., Inc., Long Island City, N. Y.
Barnebey-Cheney Co., Columbus, O.
Cambridge Filter Corp., Syracuse, N. Y. (charcoal)
Connor Engineering Corp., Danbury, Conn.
Easton R. S. Corp., Brooklyn, N.Y.
Lord & Clark Co., Inc., Boston, Mass.
Morris Deodorizers Inc., Knoxville, Tenn.
Oshkosh Filter & Softener Co., Oshkosh, Wis. (from water supply)
Radex Corp., Chicago, Ill.
Research Products Corp., Madison, Wis.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Williams Chemical Co., New York, N. Y.

ADSORPTION DEHUMIDIFIERS

See Dehumidifiers, Absorption and Adsorption

AFTERCOOLERS, COMPRESSED AIR

Acme Industries, Inc., Jackson, Mich.
Adams Co., Inc., R. P., Buffalo, N. Y.
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
American Moistening Co., Cleveland, N. C.
American-Standard Industrial Div., Detroit, Mich.
Andale Co., Philadelphia, Pa.
Armstrong Co., Richard M., West Chester, Pa.
Binks Mfg. Co., Chicago, Ill.
Brown Fintube Co., Elyria, O.
Bury Compressor Co., Erie, Pa.
Buxton Mfg. Co., Dover, N J
Centrifix Corp., Houston, Tex.
Chicago Pneumatic Tool Co., New York, N. Y.
Condenser Service & Engineering Co. Inc., Hoboken, N. J.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Doyle and Roth Mfg. Co., Inc., Brooklyn, N. Y.
Gardner-Denver Co., Quincy, Ill.
Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Griscom-Russell Co., The, Massillon, O.
Heatron, Inc., York, Pa.
Industrial Products Div., Perfex Corp., Milwaukee, Wis.
Ingersoll-Rand Co., New York, N. Y.
Johnson Corp., The, Three Rivers, Mich.
Joy Mfg. Co., Pittsburgh, Pa.
LeRoi Div., Westinghouse Air Brake Co., Milwaukee, Wis.
Manning & Lewis Engineering Co., Union, N. J.
Modine Mfg. Co., Racine, Wis.
Niagara Blower Co., New York, N. Y.
Parks-Cramer Co., Fitchburg, Mass.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Rome-Turney Radiator Co., Rome, N. Y.
Schramm, Inc., West Chester, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Spray Engineering Co.. Burlington, Mass.
Water Tube Boiler & Tank Co., Chicago, Ill.
Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Wilson Engineering Corp., Chicago, Ill.
Worthington Corp., Harrison, N. J.
Yates-American Machine Co., Heat Transfer Products Div., Beloit, Wis.
Young Radiator Co., Racine, Wis.
Yula Corp., Bronx, N. Y.

AFTERCOOLERS, FOR HOT LIQUIDS

Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Downington Iron Works, Inc., Div. of Pressed Steel Tank Co., Downington, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Industrial Products Div., Perfex Corp., Milwaukee, Wis.
Wilson Engineering Corp., Chicago, Ill.

AIR AFTERCOOLERS

See Aftercoolers, Compressed Air

AIR TO AIR HEAT RECOVERY UNITS

See Units, Heat Recovery, Air to Air

AIR BREAK FITTINGS

See Fittings, Draining, Fixed Air Break

AIR CLEANERS

See Cleaners, Air, Electrical

AIR COMPRESSORS

See Compressors, Air

AIR CONDITIONERS

See Unitary Air Conditioners

AIR CONDITIONING UNITS

See Unitary Air Conditioners

AIR CURTAIN, DOORWAYS

See Doorways, Air Curtain, for Large Entrances

AIR DIFFUSERS

See Diffusers, Air; Grilles; Panels Perforated, for Air Diffusion; Registers

AIR ELIMINATORS

See Eliminators, Air

AIR FILTER CLEANING COMPOUNDS

See Compounds, Cleaning, Air Filter

AIR FILTER GAGES

See Gages, Air Filter

AIR FILTERS

See Filters, Air

AIR FRESHENING

See Compounds, Air Freshening; Adsorbers, Odor, for Duct Systems

AIR HANDLING UNITS

See Units, Exhauster, Centrifugal Fan

AIR IMPACT WRENCHES

See Wrenches, Air Operated

AIR INTAKES

See Grilles; Intakes, for Outdoor Air, Wall or Roof, Equipped with Filters; Louvers and Shutters

AIR OPERATING VALVES

See Valves, Air Operating

AIR PURIFICATION

See Adsorbers, Odor, for Duct Systems; Compounds, Air Freshening; Lamps, Sterilizing, for Duct Installation

AIR RECOVERY EQUIPMENT

See Adsorbers, Odor, for Duct Systems

AIR SEPARATORS

See Separators, Air

AIR-TANKLESS WATER HEATERS

See Heaters, Water, Air-Tankless

AIR VALVES

See Valves, Radiators, Air

AIR VELOCITY METERS

See Meters, Air Velocity, Direct Reading; Anemometers

AIR VENTS

See Eliminators, Air

AIR VOLUME METERS

See Meters, Volume, Air and Gas

AIR WASHERS

See Washers, Air

ALARMS, COMBUSTIBLE GAS

Bailey Meter Co., Cleveland, O.
Benjamin Electric Mfg. Co., Des Plaines, Ill. (audible)
Bristol Co., The, Waterbury, Conn.
Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Hogart Engineering Co., Los Angeles, Calif.
Johnson-Williams Inc., Palo Alto, Calif.
Lundell & Co., Mt. Prospect, Ill.
Mine Safety Appliances Co., Pittsburgh, Pa.
Taller & Cooper, Inc., Brooklyn, N. Y.

ALARMS, HIGH AND LOW BOILER WATER

American District Telegraph Co., New York, N. Y.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Benjamin Electric Mfg. Co., Des Plaines, Ill. (audible)
Defender Instrument & Regulator Co., Boody, Ill
Diamond Power Specialty Corp., Lancaster, O.
Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn
Engelhard Industries, Inc., Instruments & Systems Div., East Newark, N. J.
Ernst Water Column & Gauge Co., Livingston, N. J.
Fischer & Porter Co., Warminster, Pa.
General Controls Co., Glendale, Calif.
Instruments, Inc., Tulsa, Okla.
Johnson Corp., The, Three Rivers, Mich.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Lundell & Co., Mt. Prospect, Ill.
Magnetrol, Inc., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Photobell Co., Inc., New York, N. Y.
Preferred Utilities Mfg. Corp., New York, N. Y.
Reliance Gauge Column Co., Cleveland, O.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Texas Instruments, Inc., Houston, Tex.
Watts Regulator Co., Lawrence, Mass.
Way-Wolff Associates, Inc., Long Island City, N. Y.
Yarnall-Waring Co., Philadelphia, Pa.

ALARMS, HIGH AND LOW FLOW, FOR PIPING SYSTEMS

Benjamin Electric Mfg. Co., Des Plaines, Ill. (audible)
Brooks Instrument Co., Inc., Hatfield, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Henzey Co., Watertown, Wis.
Instruments, Inc., Tulsa, Okla.
Lundell & Co., Mt. Prospect, Ill.
Magnetrol, Inc., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Oxygen Equipment & Service Co., Chicago, Ill.
Rockwood Sprinkler Co., Worcester, Mass.
Televance Corp., St. Louis, Mo.

ALARMS, LIQUID LEVEL, AUDIBLE

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American District Telegraph Co., New York, N. Y.
Applied Mechanics Co., Boston, Mass.
Automatic Control Co., St. Paul, Minn.
Automation Products Inc., Houston, Tex.
Benjamin Electric Mfg. Co., Des Plaines, Ill.
Bristol Co., The, Waterbury, Conn.
Fischer & Porter Co., Warminster, Pa.
Healy Ruff Co., St. Paul, Minn.
Kenco Pump Div., American Crucible Products Co., Lorain, O
Lundell & Co., Mt. Prospect, Ill.
Magnetrol, Inc., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
McDonnell & Miller, Inc., Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Oil Equipment Mfg. Corp., New Haven, Conn.
Petrometer Corp., Long Island City, N. Y.
Photobell Co., Inc., New York, N. Y.
Photomation, Inc., Bergenfield, N. J.
Reliance Gauge Column Co., Cleveland, O.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Scam Instrument Corp., Chicago, Ill.
Scully Signal Co., Melrose, Mass.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Uehling Instrument Co., Paterson, N. J.
Watts Regulator Co., Lawrence, Mass.
Way-Wolff Associates, Inc., Long Island City, N. Y.

ALARMS, LIQUID LEVEL, VISUAL

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
Automatic Control Co., St. Paul, Minn.
Bristol Co., The, Waterbury, Conn.
Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn
Engelhard Industries, Inc., Instruments & Systems Div., East Newark, N. J.
Fischer & Porter Co., Warminster, Pa.
Healy-Ruff Co., St. Paul, Minn.
Instruments, Inc., Tulsa, Okla.
Kenco Pumps Div., American Crucible Products Co., Lorain, O
Lundell & Co., Mt. Prospect, Ill.
Magnetrol, Inc., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Petrometer Corp., Long Island City, N. Y.
Photobell Co., Inc., New York, N. Y.
Reliance Gauge Column Co., Cleveland, O.
Scully Signal Co., Melrose, Mass.
Texas Instruments, Inc., Houston, Tex.
Uehling Instruments Co., Paterson, N. J.
Way-Wolff Associates, Inc., Long Island City, N. Y.
Worner Electronic Devices, Rankin, Ill.

ALARMS, SMOKE

American District Telegraph Co., New York, N. Y.
Bailey Meter Co., Cleveland, O.
Benjamin Electric Mfg. Co., Des Plaines, Ill. (audible)
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Canton Stoker Corp., Canton, O.
Cardox Corp., Chicago, Ill.
Cleveland Controls, Inc., Cleveland, Ohio
De-Tec-Tronic Corp., Chicago, Ill.
Edwards, L. V., Rockville Center, N. Y.
Electronics Corp. of America, Cambridge, Mass.
Fyr-Fyter Co., Dayton, O.
Gelman Instrument Co., Chelsea, Mich.
Heat-Timer Corp., New York, N. Y.
Lundell & Co., Mt. Prospect, Ill.
McNeill Smoke Eliminator Co., Chicago, Ill.
Photobell Co., Inc., New York, N. Y.
Photomation, Inc., Bergenfield, N. J.
Reliance Instruments Mfg. Corp., Glen Cove, Long Island, N. Y.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Way-Wolff Associates, Inc., Long Island City, N. Y.
Worner Electronic Devices, Rankin, Ill.

ALARMS, TEMPERATURE

America District Telegraph Co., New York.
Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.
Barber-Colman Co., Rockford, Ill.
Benjamin Electric Mfg. Co., Des Plaines, Ill. (audible)
Bristol Co., The, Waterbury, Conn.
Burling Instrument Co., Air Conditioning Div., Chatham, N. J.
Cleveland Controls, Inc., Cleveland, O.
Cutler-Hammer, Inc., Milwaukee, Wis.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Defender Instrument & Regulator Co., Boody, Ill.
Devco Engineering Inc., Control Systems Div., Caldwell, N. J.
Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Fischer & Porter Co., Warminster, Pa.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
Lundell & Co., Mt. Prospect, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Thermo Electric Co., Inc., Saddle Brook, N.J.
United Electric Controls Co., Watertown, Mass.

ALGAE AND SLIME CONTROL, WATER TREATMENT FOR

See Treatment, Water, for Slime and Algae Control

ALUMINUM COATED SHEETS

See Sheets, Aluminum Coated

ALUMINUM PIPE

See Pipe, Aluminum

ALUMINUM SHEETS

See Sheets, Aluminum

AMMETERS

Assembly Products, Inc., Chesterland, O.
Columbia Electric Mfg. Co., Cleveland, O.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
EPIC, Inc., New York, N. Y.
Pyramid Instrument Corp., Lynbrook, Long Island, N. Y.
Robinair Mfg. Corp., Montpelier, O.
Sangamo Electric Co., Springfield, Ill.
Simpson Electric Co., Chicago, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa.

ANALYZERS, CARBON DIOXIDE, PORTABLE

Airserco Mfg. Co., Inc., Pittsburgh, Pa. (electrical)
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, O.
Barclay, Inc., Robert, Chicago, Ill.
Cardox Corp., Chicago, Ill.
Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Defender Instrument & Regulator Co., Boody, Ill.
Devco Engineering, Inc., Control Systems Div., Caldwell, N. J.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Ellison Draft Gage Co., Chicago, Ill.
Engelhard Industries, Inc., Instruments & Systems Div., East Newark, N. J.
Hays Corp., Michigan City, Ind.
Mine Safety Appliances Co., Pittsburgh, Pa.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Uehling Instrument Co., Paterson, N. J.
Victory Engineering Corp., Union, N. J.
Will Corp., Rochester, N. Y.

ANALYZERS, OXYGEN

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Ellison Draft Gage Co., Chicago, Ill.
Hays Corp., The, Michigan City, Ind.
Milton Roy Co., Philadelphia, Pa.
Mine Safety Appliances Co., Pittsburgh, Pa.
Oxygen Equipment & Service Co., Chicago, Ill.

ANALYZERS, VIBRATION

Branson Instruments, Inc., Stamford, Conn. (ultrasonic)
Electric Boat Div., General Dynamics Corp., Groton, Conn.

ANCHORS, EXPANSION

Arro Expansion Bolt Co., Marion, O.
Bulldog Div., Gregory Industries, Inc., Lorain, O.
Chicago Expansion Bolt Co., Chicago, Ill.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Elcen Metal Products Co., Franklin Park, Ill.
Holub Industries, Inc., Sycamore, Ill.
Modern Hanger Corp., Cleveland, O.
National Lead Co., New York, N. Y.
Paine Co., Addison, Ill.
Rawlplug Co., Inc., The, New Rochelle, N. Y.
U. S. Expansion Bolt Co., York, Pa.

ANCHORS FOR INSULATION

See Fasteners, Insulation

ANEMOMETERS

Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Beckman & Whitley, Inc., San Carlos, Calif.
Dietzgen Co., Eugene, Chicago, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
EPIC, Inc., New York, N. Y.
Flow Corp., Arlington, Mass. (Hot wire)
Friez Instrument Div., Bendix Corp., Baltimore, Md.
G. M. Mfg. Co., New York, N. Y.
Gelman Instrument Co., Chelsea, Mich.
General Scientific Equipment Co., Philadelphia, Pa.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Hastings-Raydist, Inc., Hampton, Va.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Mine Safety Appliances Co., Pittsburgh, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Willson Products Div., Reading, Pa.

ANGLE RINGS

See Rings, Angle, for Pipe

ANGLE VALVES

See Valves, Angle

ANGLES, BARS, BEAMS, CHANNELS AND TEES (LIGHT WEIGHT SHAPES)

Acme Steel Co., Chicago, Ill. (slotted angle)
Airtron Corp., Div. of the Higgins Metal Products Co., Swanton, O.
Allegheny Ludlum Steel Corp., Pittsburgh, Pa. (Stainless)
Aluminum Co. of America, Pittsburgh, Pa.

Anaconda American Brass Co., Waterbury, Conn.
Atlantic Steel Co., Atlanta, Ga.
Bethlehem Steel Co., Bethlehem, Pa.
Byers Co., A. M., Pittsburgh, Pa.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Metal Mfg. Co., Chicago, Ill. (steel angle rings for fans, ducts, pipe)
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
Dow Chemical Co., The, Midland, Mich.
Great Western Steel Co., Chicago, Ill.
Harvey Aluminum, Torrance, Calif.
Inland Steel Co., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Kling Bros. Engineering Wks., Chicago, Ill.
Laclede Steel Co., St. Louis, Mo.
Lees Div., John, The Serrick Corp., Muncie, Ind.
Mesker Steel Corp., Geo. L., Evansville, Ind.
Olin Mathieson Chemical Corp., Metals Div., New York, N. Y.
Redi-Bolt, Inc., East Chicago, Ind.
Republic Steel Corp., Cleveland, O.
Revere Copper and Brass, Inc., New York, N. Y.
Reynolds Metals Co., Richmond, Va.
Steel City Electric Co., Pittsburgh, Pa.
Tennessee Coal & Iron Div., United States Steel Corp., Fairfield, Ala.
United States Steel Corp., Pittsburgh, Pa.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

ANODES FOR CORROSION PROTECTION
See Devices, Electrolytic, for Preventing Corrosion

ANTI-FREEZE COMPOUNDS FOR SNOW MELTING
See Compounds, Anti-Freeze

AQUASTATS
See Thermostats

ARC WELDERS
See Welders, Arc

ARC WELDING ELECTRODES
See Electrodes, Arc Welding

ASBESTOS FIBER AND CEMENT PIPE
See Pipe, Asbestos Fiber and Cement

ASBESTOS MATERIALS
See Insulation

ASBESTOS PACKING
See Packing, Asbestos

ASH CONVEYORS
See Conveyors, Coal and Ash

ASSEMBLIES, MANIFOLD, FOR METERS
Bristol Co., The, Waterbury, Conn.
Foxboro Co., Foxboro, Mass.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.

ATOMIZING NOZZLES
See Nozzles, Atomizing

ATTENUATOR BOXES, SOUND
See Units, Mixing, Sound and Volume Control, for Double Duct High Velocity Air Conditioning Systems

AXIAL FLOW FANS
See Fans, Axial Flow, Pressure Type

BACK-DRAFT DAMPERS
See Dampers, Air, Back-draft

BACKING RINGS
See Rings, Backing, for Pipe Welding

BAGS, DUST, FOR DUST COLLECTORS
Day Co., The, Minneapolis, Minn.
Ducon Co., Inc., The, Mineola, N. Y.
Industrial Laminates Div., Fabric Distributing Co., New York, N. Y.
Koppers Co., Inc., Metal Products Div., Baltimore, Md.
Menardi & Co., El Segundo, Calif.
Modern Dust Bag Co., Inc., West Haverstraw, N. Y.
Porter Co., Inc., H. K., Thermoid Div., Philadelphia, Pa.
Wagner Awning & Mfg. Co., Cleveland, O.
Wheelabrator Corp., Mishawaka, Ind.

BALANCE CLIPS
See Clips, Balance, Blower Wheel

BALANCING ELBOWS AND TEES, FOR HOT WATER HEATING AND CHILLED WATER SYSTEMS
See Elbows and Tees, Balancing, for Hot Water Heating and Chilled Water Systems

BALANCING EQUIPMENT
See Equipment, Balancing

BALANCING VALVES
See Valves, Balancing

BALL BEARINGS
See Bearings, Ball

BAROMETRIC CONTROLS
See Controls, Draft, Barometric

BARRIERS, VAPOR, FOR BUILDING INSULATION
Alumiseal Corp., New York, N. Y.
American Sisalkraft Corp., Attleboro, Mass.
Barrett Div., Allied Chemical Corp., New York, N. Y.
Bemis Bro. Bag Co., St. Louis, Mo.
Carey Mfg. Co., Philip, Cincinnati, O.
Corrosion Control Co., Inc., New York, N. Y.
Ellis & Watts Products, Inc., Cincinnati, O.
Foster Co., Benjamin, Philadelphia, Pa.
Infra Insulation, Inc., West Nyack, N. Y.
Insul-Coustic Corp., Maspeth, N. Y.
Koppers Co., Inc., Pittsburgh, Pa. (polyethylene film)
Mundet Cork Corp., North Bergen, N. J.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.
Richkraft Co., Chicago, Ill.

BARRIERS, VAPOR, FOR DUCT INSULATION
Alumiseal Corp., New York, N. Y.
American Sisalkraft Corp., Attleboro, Mass.
Armstrong Cork Co., Lancaster, Pa. (plastic asphalt emulsion)
Carey Mfg. Co., Philip, Cincinnati, O.
Corrosion Control Co., Inc., New York, N. Y.
Owens-Corning Fiberglas Corp., New York, N. Y.
Foster Co., Benjamin, Philadelphia, Pa.
Infra Insulation, Inc., West Nyack, N. Y.
Insul-Coustic, Inc., Maspeth, L.I., N. Y.
Mortell Co., J. W., Kankakee, Ill.
Richkraft Co., Chicago, Ill.
Zippertubing Co., The, Los Angeles, Calif.

BARRIERS, VAPOR, FOR PIPE INSULATION
Alumiseal Corp., New York, N. Y.
American Sisalkraft Corp., Attleboro, Mass.
Armstrong Cork Co., Lancaster, Pa. (plastic asphalt emulsion)
Carey Mfg. Co., Philip, Cincinnati, O.
Corrosion Control Co., Inc., New York, N. Y.
Foster Co., Benjamin, Philadelphia, Pa.
Industrial Laminates Div., Fabric Distributing Co., New York, N. Y.
Infra Insulation, Inc., West Nyack, N. Y.
Insul-Coustic, Inc., Maspeth, L. I., N. Y.
Johns-Manville Corp., New York, N. Y.
MMM, Inc., Houston, Tex.
Mortell Co., J. W., Kankakee, Ill.
Mundet Cork Corp., North Bergen, N. J.
Owens-Corning Fiberglas Corp., New York, N. Y.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.
Zippertubing Co., The, Los Angeles, Calif.

BASEBOARD RADIATION
See Radiation, Baseboard

BASES, MOTOR, TENSION ADJUSTING
American Pulley Co., Div. Van Norman Industries, Inc., Philadelphia, Pa.
Automatic Motor Base Co., Windsor, N. J.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Electrovent Fan & Mfg. Co., Chicago, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Industrial Marketers, Ferndale, Mich.
Korfund Co., Inc., Westbury, L. I., N. Y.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Reeves Pulley Co., Div. of Reliance Electric & Engineering Co., Columbus, Ind.
Valley Foundry & Machine Works, Inc., Fresno, Calif.

BASES, VIBRATION ISOLATING, PAD TYPE
Air-Loc Div., Clark, Cutler, McDermott Co., Franklin, Mass.
American Felt Co., Glenville, Conn.
Barry Controls, Div. of Barry Wright Corp., Watertown, Mass.
Celotex Corp., The, Chicago, Ill.
Connecticut Hard Rubber Co., New Haven, Conn. (rubber)
Fabreeka Products Co., Inc., Boston, Mass.
Felters Co., The, Boston, Mass. (adjustable)
Finn & Co., Inc., T. R., Hawthorne, N. J.
Goodrich Co., B. F., Shelton, Conn.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Hamilton Kent Mfg. Co., Kent, O.
Johns-Manville Corp., New York, N. Y.
Keldur Div. of Quimby & Co., Chester, N. J.
Korfund Co., Inc., Westbury, L. I., N. Y.
MB Electronics, New Haven, Conn.
National Cork Co., Englewood, N. J.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Raybestos-Manhattan, Inc., Passaic, N. J.
Saussé & Co., M. W., Los Angeles, Calif. (cork; rubber-in-shear)
United States Rubber Co., New York, N. Y.
Vibration Eliminator Co., Long Island City, N. Y.
Vibration Mountings & Controls, Inc., Corona, N. Y.
Voss Engineering, Inc., Chicago, Ill.
Western Felt Works, Chicago, Ill.
Wood Conversion Co., St. Paul, Minn.

BASES, VIBRATION ISOLATING, SPRING TYPE
Barry Controls, Div. of Barry Wright Corp., Watertown, Mass.
Finn & Co., Inc., T. R., Hawthorne, N. J.
Korfund Co., Inc., Westbury, L. I., N. Y.
Lord Mfg. Co., Erie, Pa.
Robinson Technical Products, Inc., Teterboro, N. J.
Sausse & Co., M. W., Los Angeles, Calif.
Vibration Eliminator Co., Long Island City, N. Y.
Vibration Mountings & Controls, Inc., Corona, N. Y.

BEARINGS, BALL
Aetna Ball & Roller Bearing Co., Div. of Parkersburg-Aetna Corp., Chicago, Ill.
Andrew Parts Mfg. Co., Long Island City, N. Y.
Bearings Co. of America, Div. of Federal-Mogul-Bower Bearings, Inc., Lancaster, Pa.
Dodge Mfg. Corp., Mishawaka, Ind.
Fafnir Bearing Co., The, New Britain, Conn.
Hoover Ball & Bearing Co., Ann Arbor, Mich.
Indus Corp., Indianapolis, Ind.
Link-Belt Co., Chicago, Ill.
Marlin-Rockwell Corp., Jamestown, N. Y.
New Departure Div., General Motors Corp., Bristol, Conn.
Nice Ball Bearing Co., Philadelphia, Pa.
Norma-Hoffman Bearings Corp., Stamford, Conn.

SKF Industries, Inc., Philadelphia, Pa.
Schatz Mfg. Co., The, Poughkeepsie, N. Y.
Sealmaster Bearings, Div. of Stephen-Adamson Mfg. Co., Aurora, Ill.
Torrington Co., The, Bantam Bearings Div., South Bend, Ind.
Wood's Sons Co., T. B., Chambersburg, Pa.

BEARINGS, NEEDLE

Andrew Parts Mfg. Co., Long Island City, N. Y.
Hyatt Bearings Div., General Motors Corp., Harrison, N. J.
Kaydon Engineering Corp., The, Muskegon, Mich.
Roller Bearing Co. of America, West Trenton, N. J.
Torrington Co., The, Bantam Bearings Div., South Bend, Ind.

BEARINGS, PILLOW BLOCK

Anti-Friction Bearings Co., Bell Gardens, Calif.
Boston Gear Works, Quincy, Mass.
Browning Mfg. Co., Maysville, Ky.
Chain Belt Co., Milwaukee, Wis.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Colgate Co., Charles A., Pittsburgh, Pa.
Congress Drives Div., Tann Corp., Detroit, Mich.
Delco Moraine Div., General Motors Corp., Dayton, O.
Dodge Mfg. Corp., Mishawaka, Ind.
Fafnir Bearing Co., The, New Britain, Conn.
Goldens' Foundry & Machine Co., Columbus, Ga.
Hewitt-Robins Inc., Stamford, Conn.
Hoover Ball & Bearing Co., Ann Arbor, Mich.
Jeffrey Mfg. Co., Columbus, O.
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill.
Lau Blower Co., Dayton, O.
Link-Belt Co., Chicago, Ill.
Marlin-Rockwell Corp., Jamestown, N. Y.
New Departure Div., General Motors Corp., Bristol, Conn.
Randall Graphite Bearings, Inc., Lima, O.
Royersford Foundry & Machine Co., Inc., Royersford, Pa.
SKF Industries, Inc., Philadelphia, Pa.
Sealmaster Bearings, Div. of Stephens Adamson Mfg. Co., Aurora, Ill.
Shafer Bearing, Div. of Chain Belt Co., Downers Grove, Ill. (self-aligning)
Torrington Co., The, Bantam Bearings Div., South Bend, Ind.
Triangle Mfg. Co., Oshkosh, Wis.
Wood's Sons Co., T. B., Chambersburg, Pa.

BEARINGS, ROLLER

Aetna Ball & Roller Bearing Co., Div. of Parkersburg-Aetna Corp., Chicago, Ill.
Andrew Parts Mfg. Co., Long Island City, N. Y.
Berna Co., A. J., Roseville, Mich.
Chain Belt Co., Milwaukee, Wis.
Dodge Mfg. Corp., Mishawaka, Ind.
Hoover Ball & Bearing Co., Ann Arbor, Mich.
Hyatt Bearings Div., General Motors Corp., Harrison, N. J.
Link-Belt Co., Chicago, Ill. (spherical)
Marlin-Rockwell Corp., Jamestown, N. Y.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Roller Bearing Co. of America, West Trenton, N. J.
Royersford Foundry & Machine Co. Inc., Royersford, Pa.
SKF Industries, Inc., Philadelphia, Pa.
Shafer Bearing, Div. of Chain Belt Co., Downers Grove, Ill. (self aligning)
Timken Roller Bearing Co., Canton, O.
Torrington Co., The, Bantam Bearings Div., South Bend, Ind.

BEARINGS, SLEEVE

Ampco Metal. Inc., Milwaukee, Wis.
Andrew Parts Mfg. Co., Long Island City, N. Y.
Bohn Aluminum & Brass Corp., Detroit, Mich.
Bound Brook Oil-less Bearing Co., Bound Brook, N. J.
Bronze Bearings, Inc., Cranford, N. J.
Cleveland Graphite Bronze, Div. of Clevite Corp., Cleveland, O.
Climax Metal Products Co., Cleveland, O.
Congress Drives Div., Tann Corp., Detroit.
Delco Moraine Div., General Motors Corp., Dayton, O.
Dodge Mfg. Corp., Mishawaka, Ind.
Federal-Mogul Div., Federal-Mogul-Bower Bearings, Inc., Detroit, Mich.
Gatke Corp., Chicago, Ill.
Haveg Industries, Inc., Wilmington, Del. (plastic)
Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
International Powder Metallurgy, Inc., Ridgway, Pa.
Johnson Bronze Co., New Castle, Pa.
Keystone Carbon Co., Inc., St. Marys, Pa.
Lau Blower Co., Dayton, O.
Link Belt Co., Chicago, Ill.
Morganite Inc., Carbon Specialties Div., Long Island City, N. Y.
Morrison Products, Inc., Cleveland, O.
Randall Graphite Bearings, Inc., Lima, O.
Tann Bearing Co., Detroit, Mich.
Triangle Mfg. Co., Oshkosh, Wis.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.

BELLOWS, THERMOSTATIC AND METALLIC

American Boa, Inc., New York, N. Y.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Automatic Control Co., St. Paul, Minn.
Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., Milford, Conn.
Bristol Co., The, Waterbury, Conn.
Cook Electric Co., Chicago, Ill.
Flexible Metal Hose Mfg. Co., Costa Mesa, Calif.
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co., San Francisco, Calif.
Solar Aircraft Co., San Diego, Calif.
Standard-Thompson Corp., Waltham, Mass.
Zallea Bros., Wilmington, Del.

BELTING, FLAT, LEATHER

Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Graton & Knight Co., Worcester, Mass.
Houghton & Co., E. F., Philadelphia, Pa.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Rhoads & Sons, J. E., Wilmington, Del.
Schieren Co., Chas. A., Camden, N. J.
Sikes Co., S. R., Minneapolis, Minn.
Sudbury Laboratory, South Sudbury, Mass.
Williams & Sons, I. B., Dover, N. H.

BELTING, FLAT, PLASTIC

Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Commercial Plastics Co., Chicago, Ill.
Extremultus, Inc., Long Island City, N. Y.
Rhoads & Sons, J. E., Wilmington, Del.
Southern Plastics Co., Columbia, S. C.

BELTING, FLAT, RUBBER

Acme-Hamilton Mfg. Corp., Trenton, N. J.
Armstrong Cork Co., Lancaster, Pa.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Gates Rubber Co., The, Denver, Colo.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Hewitt-Robins, Inc., Stamford, Conn.
Mercer Rubber Co., Hamilton Sq., N. J.
New York Belting & Packing Co., Passiac, N. J.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Porter Co., Inc., H. K., Thermoid Div., Philadelphia, Pa.
Raybestos-Manhattan, Inc., Passaic, N. J.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.
Thermoid Co., Trenton, N. J.
United States Rubber Co., New York, N. Y.

BELTS, TOOTH-GRIP OR COG

Dayco Corp., Dayton, O.
Dayton Industrial Products Co., Melrose Park, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Maurey Mfg. Corp., Chicago, Ill.
Morse Chain Co., Ithaca, N. Y.
New York Belting & Packing Co., Passaic, N. J.
Raybestos-Manhattan, Inc., Passaic, N. J.
United States Rubber Co., New York, N. Y. (rubber)
Wood's Sons Co., T. B., Chambersburg, Pa.

BELTS, V

America Pulley Co., Div. Van Norman Industries, Inc., Philadelphia, Pa.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Browning Mfg. Co., Maysville, Ky.
Climax Metal Products Co., Cleveland, O.
Congress Drives Div., Tann Corp., Detroit, Mich.
Dayco Corp., Dayton, O.
Dayton Industrial Products Co., Melrose Park, Ill.
Dodge Mfg. Corp., Mishawaka, Ind.
Durkee-Atwood Co., Minneapolis, Minn.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Gates Rubber Co., Denver, Colo.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Manheim Mfg. & Belting Co., Manheim, Pa.
Maurey Mfg. Corp., Chicago, Ill.
New York Belting & Packing Co., Passaic, N. J.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Plummer Mfg. Co., W. A., Los Angeles, Calif.
Pyott Foundry & Machine Co., Aurora, Ill.
Porter Co., Inc., H. K., Thermoid Div., Philadelphia, Pa.
Raybestos-Manhattan, Inc., Passaic, N. J.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.
Schieren Co., Chas. A., Camden, N. J.
Sikes Co., S. R., Minneapolis, Minn. (leather)
Thermoid Co., Trenton, N. J.
United States Rubber Co., New York, N. Y.
Wood's Sons Co., T. B., Chambersburg, Pa.
Worthington Corp., Harrison, N. J.
Zatko Metal Products Co., Euclid, O.

BENDERS, PIPE

American Pipe Bending Machine Co., Inc., Poultney, Vt.
American Pipe Tool Co., Chicago, Ill.
Blackhawk Mfg. Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Burr Oak Tool & Gauge Co., Sturgis, Mich.
Excelsior Tool & Machine Co., East St. Louis, Ill.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.
Halsey Distributors, Wilton, Conn.
Hein-Werner Corp., Waukesha, Wis.
Hill, Inc., Walter P., Detroit, Mich.
Holsclaw Bros. Inc., Evansville, Ind.
Hossfeld Mfg. Co., Winona, Minn.
Imperial-Eastman Corp., Chicago, Ill.
Lenz Co., Dayton, O.
Lidseen of North Carolina, Inc., Hayesville, N. C.
Milton Equipment Co., Philadelphia, Pa.
National Pipe Bending Co., New Haven, Conn.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Pedrick Tool & Machine Co., Philadelphia, Pa.
Pines Engineering Co., Inc., Aurora, Ill.
Sac Tool Mfg. Co., St. Louis, Mo.
Senna Mfg. Co., Spokane, Wash.
Vanderman Mfg. Co., Willimantic, Conn.
Wallace Supplies Mfg. Co., Chicago, Ill.
Wilson Co., K. R., Arcade, N. Y.

BENDERS, TUBING

Anderson Metals Corp., Kansas City, Mo.
Blackhawk Mfg. Co., Milwaukee, Wis.

Bonney Forge & Tool Wks., Allentown, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Burr Oak Tool & Gauge Co., Sturgis, Mich.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Specialty Mfg. Co., Chicago, Ill.
Duro Metal Products Co., Chicago, Ill.
Erie Tool Works, Erie, Pa.
Excelsior Tool & Machine Co., East St. Louis, Ill.
Fairmount Tool & Forging, Inc., Cleveland, O.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.
Halsey Distributors, Wilton, Conn.
Hein-Werner Corp., Waukesha, Wis.
Hill, Inc., Walter P., Detroit, Mich.
Holsclaw Bros., Inc., Evansville, Ind.
Hossfeld Mfg. Co., Winona, Minn.
Imperial-Eastman Corp., Chicago, Ill.
Lenz Co., Dayton, O.
Leonard Precision Products Co., Santa Ana, Calif.
Madden Brass Products Co., Aurora, Ill.
Milton Equipment Co., Philadelphia, Pa.
Mueller Brass Co., Port Huron, Mich.
National Pipe Bending Co., New Haven Conn.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Obear & Sons, Inc., Inglewood, Calif.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Owatonna Tool Co., Owatonna, Minn.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Pedrick Tool & Machine Co., Philadelphia, Pa.
Pines Engineering Co., Inc., Aurora, Ill.
Piper Industries, Inc., Roseville, Mich.
Sac Tool Mfg. Co., St. Louis, Mo.
Senna Mfg. Co., Spokane, Wash.
Steel City Electric Co., Pittsburgh, Pa.
Toledo Pipe Threading Machine Co., Toledo, O.
Wallace Supplies Mfg. Co., Chicago, Ill.
Wilson Co., K. R., Arcade, N. Y.
Wilson Manufacturing Co., Memphis, Tenn.

BENDS, EXPANSION, STEAM PIPE

Atlantic Pipe Bending & Fabricating Corp., Moonachie, N. J.
Blaw Knox Co., Power Piping Div., Pittsburgh, Pa.
Cobra Pipe Supply & Coil Co., Inc., Elmwood. Conn.
Crane Co., Chicago, Ill
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Durant Insulated Pipe Co., E. Palo Alto, Calif.
Grinnell Co., Inc., Providence, R. I.
Kellogg Co., M. W., The, New York, N. Y.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
Mitchell & Co., Inc., W. K., Philadelphia, Pa.
National Pipe Bending Co., New Haven Conn.
National Valve & Mfg. Co., Pittsburgh, Pa.
Ohio Pipe Bending & Machine Co., Cleveland, O.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Pittsburgh Standard Products Co., Verona, Pa.
Rempe Co., Chicago, Ill.
Ric-wiL, Inc., Barberton, O.
Roessing Mfg. Co., Pittsburgh, Pa.
Sales Div., Murray W., Detroit, Mich.
Shaw Co., Benjamin F., Wilmington, Del.
Shaw-Kendall Engineering Co., Toledo, O.
Star Tubular Products Co., Chicago, Ill.
Taylor Engineering Corp., Detroit, Mich.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.
Western Piping & Engineering Co., Inc., San Francisco. Calif.
Whitlock Mfg. Co., W. Hartford, Conn.

BENDS, PIPE, RETURN

Atlantic Pipe Bending & Fabricating Corp., Moonachie, N. J.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Clow & Sons, Inc., James B., Chicago, Ill.
Cobra Pipe Supply & Coil Co., Inc., Elmwood, Conn.
Crane Co., Chicago, Ill.
Elkhart Products Corp., Elkhart, Ind.
Gerry Tool Co., Inc., Bronx, N. Y.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Imeco, Inc., Chicago, Ill.
Kam Products Corp., Brooklyn, N. Y.
Lewis & Saunders, Inc., Lakeport, N. H.
Midwest Piping Co., Inc., St. Louis, Mo.
National Pipe Bending Co., New Haven, Conn.
Ohio Pipe Bending & Machine Co., Cleveland, O.
O.T.M. Corp., Houston, Tex.
Pittsburgh Nipple Works, Pittsburgh, Pa.
Rittling Corp., The, Buffalo, N. Y.
Roessing Mfg. Co., Pittsburgh, Pa.
Sales Div., Murray W., Detroit, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.
Speedline Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Star Tubular Products Co., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Union Malleable Mfg. Co., Ashland, O.
Vilter Mfg. Co., The, Milwaukee, Wis.
Ward Foundries, Inc., J. P., Blossburg, Pa.
Western Piping & Engineering Co., Inc., San Francisco, Calif.

BI-METALS, THERMOSTATIC

American Silver Co., Flushing, N. Y.
Chace Co., W. M., Detroit, Mich.
Engelhard Industries, Inc., Newark, N. J.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Texas Instruments Inc., Metals & Controls Div., Attleboro, Mass.
Wilson Div., H. A., Engelhard Industries, Union, N. J.

BLADES, PROPELLER FAN

Aerovent Fan Co., Inc., Piqua, O.
Aire-Foile Fan & Blower Co., Detroit, Mich.
Airmaster Corp., Chicago, Ill.
Alloy Propeller, Zelionople, Pa.
Bertram Co., Harvey P., The, Cincinnati, O.
Broan Mfg. Co., Inc., Hartford, Wis.
Bronson Fan Mfg. Corp., Los Angeles, Calif.
Burden Co., Alan E., Los Angeles, Calif,
C & H Air Conditioning Fan Co., Inc., Atlanta, Ga.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Subsid. of Chelsea Products, Inc., Plainfield, N. J.
Chicago Blower Corp., Franklin Park, Ill.
Dayco Corp., Dayton, O.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Frigid, Inc., Brooklyn, N. Y.
Hudson Engineering Corp., Houston, Tex. (plastic)
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
International Engrg. Inc., Dayton, O.
Kody Blower Co., Trenton, N. J.
Koppers Company, Inc., Metal Products Div., Baltimore, Md.
Lakewood Engineering & Mfg. Co., Chicago.
Martin Fan & Blower Co., Chicago, Ill.
Maurey Mfg. Corp., Chicago, Ill.
Meier Electric, Indianapolis, Ind.
Porter Co., Inc., H. K., Peerless Electric Div., Warren, O.
Precision Fan Blade Mfg. Co., Div. of Warrington Co., Los Angeles, Calif.
Propellair Div., Robbins & Myers, Inc., Springfield, O.
Robinson Ventilating Co., Zelienople, Pa.
Schwitzer Corp., Indianapolis, Ind.
South Bend Air Products, Inc., South Bend, Ind.
Torrington Mfg. Co., Torrington, Conn.
Ventco, Inc., Houston, Tex.
Whirlwind Mfg. Co., Houston, Tex.
Wind-Way Fan & Ventilator Co., New Orleans, La.

BLAST GATES

See Gates, Blast

BLAST HEATERS

See Surface, Finned, Heating

BLAST HEATING COILS

See Surface, Finned, Heating

BLINDS, LINE, PIPE

Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Hamer Valves, Inc., Long Beach, Calif.
Ladish Co., Cudahy, Wis.
Plant Engineering & Equipment Co., Elizabeth, N. J.
Smith-Blair, Inc., South San Francisco, Calif.
Vernon Tool Co., Ltd., Alhambra, Calif.

BLOCKS, TERMINAL, FOR ELECTRICAL CONNECTIONS

Allen-Bradley Co., Milwaukee, Wis.
Cam-Lok Div., Empire Products, Inc., Cincinnati, O.
Cutler-Hammer, Inc., Milwaukee, Wis.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Kulka Electric Corp., Mt. Vernon, N. Y.
Marathon Electric Mfg. Corp., Wausau, Wis.
Pyle-National Co., The, Chicago, Ill.
Sealed Unit Parts Co., Inc., New York, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.

BLOW PIPE FITTINGS

See Fittings, Blow Pipe

BLOWER FANS

See Fans, Axial Flow; and Fans, Centrifugal

BLOWER HOUSINGS

See Housings, Fan

BLOWER WHEELS

See Wheels, Blower

BLOWERS, HIGH PRESSURE

For Low Pressure Blower Fans, See Fans, Centrifugal

Airfan Engineering Co., Los Angeles, Calif.
American-Standard Industrial Div., Detroit, Mich.
Barry Blower Co., Minneapolis, Minn
Bayley Blower Co., A Div. of the Green Fuel Economizer Co., Inc., Milwaukee, Wis.
Beach-Russ Co., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Fan & Ventilating Co., Cincinnati, O.
Clarage Fan Co., Kalamazoo, Mich.
Day Co., The, Minneapolis, Minn.
Dayton Electric Mfg. Co., Chicago, Ill.
De Laval Steam Turbine Co., Trenton, N. J.
Dynamic Air Engineering, Inc., Los Angeles, Calif.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Elliott Co., Jeannette, Pa.
Gaffers & Sattler, Los Angeles, Calif.
General Blower Co., Subsid. Ilg Electric Ventilating Co., Morton Grove, Ill.
Hauck Mfg. Co., Brooklyn, N. Y.
Ilg Electric Ventilating Co., Chicago, Ill.
Industrial Plastic Fabricators, Norwood, Mass. (plastic construction for exhaust and corrosive fumes)
Ingersoll-Rand Co., New York, N. Y.
Jan-Air, Inc., Richmond, Ill.
Joy Mfg. Co., Pittsburgh, Pa.
Kice Metal Products Co., Wichita, Kans.
Lammert & Mann Co., Chicago, Ill.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif
Mountain States Equipment Co., Denver, Colo.
New York Blower Co., Chicago, Ill.
North American Mfg. Co., Cleveland, O.
Porter Co., Inc., H. K., Peerless Electric Div., Warren, O.
Power Engineering Corp., Mingo Jct., O.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Research Vacuum Supply Co., Chicago, Ill.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Spencer Turbine Co., Hartford, Conn.
Standard Electric Mfg. Co., West Berlin, N. J.
Sutorbilt Corp., Subsidiary of Fuller Co., Compton, Calif.
Torrington Mfg. Co., The, Torrington, Conn.
Trane Co., The, La Crosse, Wis.
U. S. Air Conditioning Corp., Delaware, O.
Western Blower Co., Seattle, Wash.

Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

BLOWERS, SOOT

Bate Soot Blower Div., General Blower Co., Inc., Philadelphia, Pa.
Bayer Co., St. Louis, Mo.
Boiler Equipment Trust, Amherst, Mass.
Chesterton Co., A. W., Everett, Mass.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Diamond Power Specialty Corp., Lancaster, O.
Joy Mfg. Co., Pittsburgh, Pa.
Marion Machine Foundry Inc., Marion, Ind.

BLOW-OFF VALVES

See Valves, Blow-off

BLUE PRINT MACHINES

See Machines, Blue Print and White Print

BOARDS, PANEL AND CONTROL

Ace Engineering Co., Chicago, Ill.
Adam Electric Co., Frank, St. Louis, Mo.
Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Auto-Control Laboratories, Inc., Los Angeles, Calif.
Automatic Control Co., St. Paul, Minn.
Automatic Switch Co., Florham Park, N. J.
Barber-Colman Co., Rockford, Ill.
Bailey Meter Co., Cleveland, O.
Better Engineered Controls, Los Angeles, Calif.
Bristol Co., The, Waterbury, Conn.
Cleveland Controls, Inc., Cleveland, O.
Cutler-Hammer, Inc., Milwaukee, Wis.
Devco Engineering, Inc., Control Systems Div., Caldwell, N. J.
Eclipse Fuel Engineering Co., Rockford, Ill.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Falstrom Co., Passaic, N. J.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hays Corp., Michigan City, Ind.
International Business Machines Corp., New York, N. Y.
Iron Fireman Mfg. Co., Cleveland, O.
Johns-Manville Corp., New York, N. Y.
Kirk & Blum Mfg. Co., Cincinnati, O.
Littleford Bros., Inc., Cincinnati, O.
Lundell & Co., Mt. Prospect, Ill.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Nelson Electric Mfg. Co., Tulsa, Okla.
Powers Regulator Co., Skokie, Ill.
Protection Controls, Inc., Skokie, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Seton Name Plate Co., Inc., New Haven, Conn.
Shallcross Controls, Inc., Markesan, Wis.
Square D Co., Distribution Equipment Div., Lexington, Ky.
Taller & Cooper, Inc., Brooklyn, N. Y.
Trerice Co., H. O., Detroit, Mich.
Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.
Westinghouse Electric Corp., Pittsburgh, Pa.
Will-Burt Co., Orrville, O.

BOILER BLOWDOWN VALVES

See Valves, Continuous Boiler Blowdown

BOILER CLEANING COMPOUNDS

See Compounds, Boiler Cleaning

BOILER FEED PUMPS

See Pumps, Boiler Feed

BOILER FEEDERS

See Feeders, Water, Heating Boiler

BOILER GAGES

See Gages, Liquid Level

BOILER OBSERVATION PORTS

See Ports, Observation, Boiler

BOILER SEALING COMPOUNDS

See Compound, Boiler and Radiator Sealing

BOILER AND TANK INSULATION

See Insulation, Boiler and Tank

BOILER TUBES

See Tubes, Boiler

BOILER WATER ALARMS

See Alarms, High and Low Boiler Water

BOILERS, ELECTRIC

See Generators, Steam, Electric

BOILERS, HEATING, CAST IRON, SECTIONAL

2000 Sq Ft Steam Radiation and Over

Ackerman Gas Boiler Corp., McDonald, Pa.
American-Standard Plumbing & Heating Div., New York, N. Y.
Bastian-Morley Co., Inc., LaPorte, Ind.
Bryant Mfg. Co., Indianapolis, Ind.
Burnham Corp., Irvington, N. Y.
Crane Co., Chicago, Ill.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Eastern Boiler & Electronics Corp., Manchester, Conn.
Hydrotherm, Inc., Northvale, N. J.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa. (all fuels)
Peerless Heater Co., The, Div. of the Eastern Foundry Co., Boyertown, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Prox Co., Inc., Frank, Terre Haute, Ind.
Rheem Mfg. Co., Chicago, Ill.
Richmond Plumbing Fixtures Div., Rheem Mfg. Co., Metuchen N J.
Smith Co., Inc., H. B., The, Westfield, Mass.
Surface Combustion Corp., Toledo, O.
Weil McLain Co., Michigan City, Ind.

BOILERS, HEATING, STEEL, FIRE TUBE

2000 Sq Ft Steam Radiation and Over

Ajax Boiler & Heater Co., Gardena, Calif.
Aldrich Co., Wyoming, Ill.
American-Standard Industrial Div., Detroit, Mich.
Atlantic Steel Boiler Co., Philadelphia, Pa.
Bigelow Co., New Haven, Conn.
Birchfield Boiler, Inc., Tacoma, Wash.
Bros Inc., Minneapolis, Minn.
Burnham Corp., Irvington, N. Y.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Combustion Engineering, Inc., New York.
Crotty Mfg. Corp., Flushing, L. I., N. Y.
Dillon Steam Boiler Wks., Inc., D. M., Fitchburg, Mass.
Eclipse Boiler Div., Eclipse Fuel Engineering Co., Chattanooga, Tenn.
Erie City Iron Wks., Erie, Pa.
Federal Boiler Co., Inc., Midland Park, N. J.
Fitzgibbons Boiler Co., Inc., New York, N. Y. (39-600 hp)
Gabriel Boiler & Fabrication Co., Portland, Ore.
Hamburg Boiler Works, Inc., Hamburg, Pa.
Hodge Boiler Wks., East Boston, Mass.
Industrial Combustion, Inc., Milwaukee, Wis. (low pressure, 125 or 150 psi; capacity from 10 to 460 hp)
Johnston Bros., Inc., Ferrysburg, Mich.
Leffel & Co., James, Springfield, O.
Mt. Hawley Mfg. Co., Inc., Peoria, Ill.
Murray Iron Wks. Co., Burlington, Ia.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Orr & Sembower, Inc., Reading, Pa.
Pacific Steel Boiler Div., Crane Co., Johnstown, Pa. (320 sq ft thru 60710 sq ft)
Patco Mfg. Co., Inc., Philadelphia, Pa.
Portmar Boiler Co., Inc., Brooklyn, N. Y.
Queen City Engineering Co., Charlotte, N. C.
Ray Oil Burner Co., San Francisco, Calif.
Reif-Rexoil, Inc., Buffalo, N. Y.
Smith Twin Tubular Boiler Co., Inc., Philadelphia, Pa.
Spencer Heater, Lycoming Division, Avco Corp., Williamsport, Pa.
Stout & Sons, David, St. Louis, Mo.
Struthers Wells Corp., Warren, Pa.
Terre Haute Boiler Works Co., Terre Haute, Ind.
Titusville Iron Wks. Co., The, Titusville, Pa.
Viking Mfg. Corp., Cleveland, O.
Water Tube Boiler & Tank Co., Chicago, Ill.
Western Boiler Co., Los Angeles, Calif.

BOILERS, HEATING, STEEL, TUBELESS

Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Axeman-Anderson Co., Williamsport, Pa.
Bigelow Co., The, New Haven, Conn.
Bryant Mfg. Co., Indianapolis, Ind.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Edwards Engineering Corp., Pompton Plains, N. J.
Mt. Hawley Mfg. Co., Inc., Peoria, Ill.
V. & E. Products, Inc., Schuylkill Haven, Pa.
Viking Mfg. Corp. Cleveland, O.
Wescott Snyder Mfg. Corp., Madison, N. J.

BOILERS, HEATING, STEEL, WATER TUBE

Ajax Boiler & Heater Co., Gardena, Cailf.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Atlantic Steel Boiler Co., Philadelphia, Pa.
Auburn Burner Co., Auburn, Ind.
Babcock & Wilcox Co., Boiler Div., Barberton, O.
Bigelow Co., The, New Haven, Conn.
Boiler Engineering & Supply Co., Phoenixville, Pa. (for high temperature water; 4 to 25 million Btu per hr vertical or horizontal type oil, gas, coal or combination fired)
Bros Inc., Minneapolis, Minn.
Bryan Steam Corp., Peru, Ind.
Central States Steel Boiler Co., Chicago, Ill.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Combustion Engineering, Inc., New York, N. Y.
Erie City Iron Wks., Erie, Pa.
Gibraltar Corp. of America, Brooklyn, N. Y.
Gold Top Heating, Inc., San Gabriel, Calif.
Hercules Power Equipment Co., Los Angeles, Calif.
International Boiler Wks. Co., The, East Stroudsburg, Pa.
Keeler Co., E., Williamsport, Pa.
Manville Boiler Co., Inc., Hackettstown, N. J.
Murray Iron Wks. Co., Burlington, Ia.
Nebraska Boiler Company, Inc., Lincoln, Nebr.
Parker Boiler Mfg. Co., Sid E., Los Angeles, Calif.
Queen City Engineering Co., Charlotte, N. C.
Raypak Co., Inc., El Monte, Calif. (copper tubes)
Reif-Rexoil, Inc., Buffalo, N. Y.
Riley Stoker Corp., Worcester, Mass.
Rite Engineering & Mfg. Corp., Downey, Calif.
Springfield Boiler Co., Springfield, Ill.
Texsteam Corp., Houston, Tex.
Thermo-Pak Boilers, Inc., Alhambra, Calif. (copper tubes)
Titusville Iron Works Co., The, Titusville, Pa.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
V. & E. Products, Inc., Schuylkill Haven, Pa.
Vogt Machine Co., Henry, Louisville, Ky.
Water Tube Boiler & Tank Co., Chicago, Ill.
Wescott Snyder Mfg. Corp., Madison, N. J.
Wickes Boiler Co., Saginaw, Mich.
Zingheim Co., William C., Chicago, Ill.

BOILERS, HIGH PRESSURE — HIGH TEMPERATURE HOT WATER

Babcock & Wilcox Co., The, Boiler Div., Barberton, O.
Boiler Engineering & Supply Co., Phoenixville, Pa.
Bros. Inc., Minneapolis, Minn.
Eclipse Boiler Div., Eclipse Fuel Engineering Co., Chattanooga, Tenn.
International Boiler Works Co., East Stroudsburg, Pa.

Lookout Boiler & Mfg. Co., Chattanooga, Tenn.
Queen City Engineering Co., Charlotte, N. C.
Thermo-Pak Boilers, Inc., Alhambra, Calif.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
Wickes Boiler Co., The, Saginaw, Mich.

BOILERS, PACKAGED UNITS, HEATING AND PROCESS—*Including Controls, Feed Pump, etc.*

Ackerman Gas Boiler Corp., McDonald, Pa. (gas fired steam & water, 72,000 Btu to 1,500,000 Btu)
Ajax Boiler & Heater Co., Gardena, Calif.
American-Standard Industrial Div., Detroit.
American-Standard Plumbing & Heating Div., New York, N. Y.
Ames Iron Works, Inc., Oswego, N. Y. (20 to 600 bhp)
Atlantic Steel Boiler Co., Philadelphia, Pa. (20 to 125 hp; gas and oil)
Axeman-Anderson Co., Williamsport, Pa. (coal & oil)
Babcock & Wilcox Co., Boiler Div., Barberton, O.
Bethlehem Foundry & Machine Co., Bethlehem, Pa. (1.0 to 3.5 gph)
Bigelow Co., The, New Haven, Conn.
Birchfield Boiler, Inc., Tacoma, Wash.
Boiler Engineering & Supply Co., Phoenixville, Pa. (15 to 600 Hp, 15 to 250 psi oil-gas or combination fired)
Bros Inc., Minneapolis, Minn.
Bryan Steam Corp., Peru, Ind. (4 to 50 hp, 15 to 125 psi gas and oil)
Clayton Mfg. Co., El Monte, Calif. (16½-175 hp; 65-300 psi; gas, oil, and combination)
Cleaver-Brooks Co., Milwaukee, Wis. (15-600 hp oil, gas fired; 15-60 hp)
Columbia Boiler Co. of Pottstown, Pottstown, Pa.
Combustion Engineering, Inc., New York, N. Y. (4,000 lb/Hr to 90,000 lb/Hr)
Cyclotherm Div., Crane Co., Oswego, N. Y.
Eastern Boiler & Electronics Corp., Manchester, Conn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eclipse Boiler Div., Eclipse Fuel Engineering Co., Chattanooga, Tenn.
Edwards Engineering Corp., Pompton Plains, N. J. (100,000 to 600,000 Btu per hr; gas and oil)
Erie City Iron Works, Erie, Pa.
Fitzgibbons Boiler Co., Inc., New York, N. Y. (oil; oil and gas 15 to 150 lb steam)
Foster Wheeler Corp., New York, N. Y.
Gabriel Boiler Co., Portland, Ore. (3-500 HP)
Hodge Boiler Wks., East Boston, Mass.
Hydrotherm, Inc., Northvale, N. J.
International Boiler Works Co., East Stroudsburgh, Pa.
Iron Fireman Mfg. Co., Cleveland, O. (up to 600 bhp gas, oil, dual-fuel)
Johnston Bros., Inc., Ferrysburg, Mich.
Keeler Co., E., Williamsport, Pa.
Kisco Boiler & Engineering Co., St. Louis.
Laars Engineers, North Hollywood, Calif.
Lattner Mfg. Co., P. M., Cedar Rapids, Iowa
Leffel & Co., James, Springfield, O.
Littleford Bros., Inc., Cincinnati, O.
Lookout Boiler & Mfg. Co., Chattanooga, Tenn. (3 hp thru 100 hp — oil or gas)
Malsbary Mfg. Co., Oakland, Calif.
Martin Co., Inc., J. O., San Francisco, Calif.
Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.
Murry Iron Works Co., Burlington, Ia.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa. (20-60 hp; gas and oil)
Nebraska Boiler Co., Inc., Lincoln, Nebr.
Orr & Sembower, Inc., Reading, Pa.
Pacific Steel Boiler Div., Crane Co., Johnstown, Pa. (320 sq ft thru 60,710 sq ft oil or gas 15 psig steam, 30 psig water)
Pantex Mfg. Corp., Pawtucket, R. I.
Parker Boiler Mfg. Co., Sid E., Los Angeles Calif. (1½ Hp - 150 Hp. Pressure to 200 psi. Gas, oil and combination firing)
Patco Mfg. Co., Inc., Philadelphia, Pa.
Petro, Cleveland, O. (up to 600 hp gas, oil and combination; high pressure)
Preferred Utilities Mfg. Corp., New York. (20 to 600 boiler hp. Design pressure from 15 to 250 psi. All grades of oil and gas or combination gas and oil)

Queen City Engineering Co., Charlotte, N. C. (300 to 40,000 lb of steam per hr; to 300 psi)
Ray Oil Burner Co., San Francisco, Calif.
Paypak Co., Inc., El Monte, Calif. (all gases; 80,000-1,200,000 Btu per hr)
Reif-Rexoil, Inc., Buffalo, N. Y.
Rite Engineering & Mfg. Corp., Downey, Calif.
SelecTemp Div., Iron Fireman Mfg. Co., Cleveland, O. (114,000 to 2,000,000 Btu gas or oil)
Sellers Engineering Co., Chicago, Ill.
Springfield Boiler Co., Springfield, Ill. (12,000 to 100,000 lb per hr, 200 to 900 psig, gas & oil fired)
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind. (300 to 970 Sq ft steam; 555 to 1555 sq ft water)
Stout & Sons, David, St. Louis, Mo. (up to 420,000 sq ft EDR; up to 400 psig; gas and oil fuels)
Struthers Wells Corp., Warren, Pa.
Superior Combustion Industries, Inc., New York, N. Y. (fire tube 20-600 hp to 250 psi, oil, gas or both; water tube 4000 to 61,000 lb per hr., oil, gas or both)
Terre Haute Boiler Works Co., Terre Haute, Ind. (15 to 600 hp; 15 to 200 psi, steam)
Texsteam Corp., Houston, Tex.
Titusville Iron Works Co., The, Titusville, Pa.
Turb-O-Heat, Inc., Brooklyn, N. Y.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
Vapor Heating Corp., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky. (10,000 to 50,000 lb of steam per hr capacities)
Way-Wolff Associates, Inc., Long Island City.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J. (Gas, oil; 2000 to 5000 sq ft E.D.R.)
Wescott Snyder Mfg. Corp., Madison, N. J. (oil & gas)
Western Boiler Co., Los Angeles, Calif.
Wickes Boiler Co., Saginaw, Mich.
York-Shipley, Inc., York, Pa.

BOILERS, PORTABLE, STEAM FOR STEAM CLEANING, MISCELLANEOUS PROCESS, OTHER USES

Bros Inc., Minneapolis, Minn.
Eclipse Boiler Div., Eclipse Fuel Engineering Co., Chattanooga, Tenn.
Industrial Combustion, Inc., Milwaukee, Wis. (low pressure, 125 or 150 psi; capacity from 10 to 460 hp)
Lattner Mfg. Co., P. M., Cedar Rapids, Ia.
Leffel & Co., James, Springfield, O.
Lookout Boiler & Mfg. Co., Chattanooga, Tenn.
Nebraska Boiler Co., Inc., Lincoln, Nebr.
Pantex Mfg. Corp., Pawtucket, R. I.
Queen City Engineering Co., Charlotte, N. C.
Texsteam Corp., Houston, Tex.
Turb-O-Heat, Inc., Brooklyn, N. Y.
Vapor Heating Corp., Chicago, Ill.
Western Boiler Co., Los Angeles, Calif.

BOLTS, EXPANSION

Arro Expansion Bolt Co., Marion, O.
Bulldog Div., Gregory Industries, Inc., Lorain, O.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Expansion Bolt Co., Chicago, Ill.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Elcen Metal Products Co., Franklin Park, Ill.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Harper Co., H. M., Morton Grove, Ill.
Holub Industries, Inc., Sycamore, Ill.
Industrial Screw Co., Chicago, Ill.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
National Lead Co., New York, N. Y.
Paine Co., Addison, Ill.
Phillips Drill Co., Michigan City, Ind.
Rawlplug Co., Inc., The, New Rochelle, N. Y.
Republic Steel Corp., Cleveland, O.
Star Expansion Industries Corp., Mountainville, N. Y.
U. S. Expansion Bolt Co., York, Pa.

BOLTS AND STUDS, FLANGE

Abbott Products, Inc., Whitestone, N. Y.
Anti-Corrosive Metal Products Co., Inc., Castleton-On-Hudson, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Bulldog Div., Gregory Industries, Inc., Lorain, O.
Carpenter & Paterson, Inc. Cambridge, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Clark Bros. Bolt Co., Milldale, Conn.
Erie Bolt & Nut Co., Erie, Pa.
Harper Co., H. M., Morton Grove, Ill.
Haskell Mfg. Co., Wm. H., Pawtucket, R. I.
Industrial Screw Co., Chicago, Ill.
Lamson & Sessions Co., Cleveland, O.
Mac-Lean-Fogg Lock Nut Co., Chicago, Ill.
Pheoll Mfg. Co., Inc., Chicago, Ill.
Redi-Bolt, Inc., East Chicago, Ind.
Republic Steel Corp., Cleveland, O.
Rockford Screw Products Co., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Victor Products Corp., Chicago, Ill.

BOLTS, TOGGLE AND ANCHOR

Arro Expansion Bolt Co., Marion, O.
Bethlehem Steel Co., Bethlehem, Pa.
Bulldog Div., Gregory Industries, Inc., Lorain, O.
Carpenter & Paterson, Inc., Cambridge, Mass.
Chase Brass & Copper Co., Waterbury Conn
Chicago Expansion Bolt Co., Chicago Ill.
Clark Bros. Bolt Co., Milldale, Conn
Crawford Co., Chicago, Ill.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Elcen Metal Products Co., Franklin Park, Ill.
Fastway Fasteners, Inc., Lorain, O.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Holub Industries, Inc., Sycamore, Ill.
Industrial Screw Co., Chicago, Ill.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Modern Hanger Corp., The, Cleveland, O.
Moore, Inc., Goodloe E., Danville, Ill.
Paine Co., Addison, Ill.
Phillips Drill Co., Michigan City, Ind.
Rawlplug Co., Inc., The, New Rochelle, N. Y.
Republic Steel Corp., Cleveland, O.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Star Expansion Industries Corp., Mountainville, N. Y.
U. S. Expansion Bolt Co., York, Pa.
Western Wire Products Co., St. Louis, Mo. (flattened lag)

BOLTS, "U"

Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Carpenter & Patterson, Inc., Cambridge, Mass.
Clark Bros. Bolt Co., Milldale, Conn.
Elcen Metal Products Co., Franklin Park, Ill.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Harper Co., H. M., Morton Grove, Ill.
Lamson & Sessions Co., The, Cleveland, O.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Modern Hanger Corp., The, Cleveland, O.
Republic Steel Corp., Cleveland, O.
Steel City Electric Co., Pittsburgh, Pa.
U. S. Expansion Bolt Co., York, Pa.

BOOSTER TRANSFORMERS

See Transformers, Boost and Buck

BOOSTERS, GAS

Beach-Russ Co., New York, N. Y.
Bury Compressor Co., Erie, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eisler Engineering Co., Inc., Newark, N. J.
Haskel Engineering & Supply Co., Glendale, Calif.
Joy Mfg. Co., Pittsburgh, Pa.
Leiman Bros., Inc., Newark, N. J.
North American Mfg. Co., Cleveland, O.
Research Vacuum Supply Co., Chicago, Ill.
Roots-Connersville Blower, Div. of Dresser Industries, Inc, Connersville, Ind.
Spencer Turbine Co., Hartford, Conn.

BOOTHS, PAINTING, SPRAY

Binks Mfg. Co., Chicago, Ill.

Black Mfg. Co., The, Div. of Alexander Milburn, Inc., Baltimore, Md.
Burdett Mfg. Co., Chicago, Ill.
Carolina Blower Co., Inc., Greensboro, N. C.
Centri-Spray Corp., Livonia, Mich. (wet type)
David-Ludwig Co., Detroit, Mich.
DeVilbiss Co., The, Toledo, O.
DeVilbiss Metal Fabricators Co., Detroit, Mich.
Goethel Sheet Metal Works, Inc., Alfred, Milwaukee, Wis.
Kirk & Blum Mfg. Co., Cincinnati, O.
Lumm Co., A. H., Toledo, O.
M & E Mfg. Co., Indianapolis, Ind.
Mahon Co., R. C., The, Detroit, Mich.
Newcomb-Detroit Co., Detroit, Mich.
Plummer Spray Equipment Co., Napolean. O.
Ramco Equipment Corp., Div. of Randall Mfg. Co., Inc., New York, N. Y.
Spray Engineering Co., Burlington, Mass.
United Sheet Metal Co., Inc., Columbus, O.
Young & Bertke Co., Cincinnati, O.
Zack Co., The, Chicago, Ill.

BRAKES, SHEET METAL, HAND

Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Dreis & Krump Mfg. Co., Chicago, Ill.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Works, Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
St. Louis Tool Co., St. Louis, Mo.
Whitney Metal Tool Co., Rockford, Ill.

BRAKES, SHEET METAL, PORTABLE

Auburn Machine Works, Inc., Auburn, Neb.
Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Dreis & Krump Mfg. Co., Chicago, Ill.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Whitney Metal Tool Co., Rockford, Ill.

BRAKES, SHEET METAL, POWER

Bath Co., Cyril, The, Solon, O.
Cincinnati Shaper Co., Cincinnati, O.
Cleveland Crane & Eng. Co., Wickliffe, O.
Diamond Machine Tool Co., Pico, Calif.
Dreis & Krump Mfg. Co., Chicago, Ill.
Excelsior Tool & Machine Co., East St. Louis, Ill.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
Verson Allsteel Press Co., Chicago, Ill.
Verson Mfg. Co., The, Dallas, Tex.
Whitney Metal Tool Co., Rockford, Ill.
Wilson Co., K. R., Arcade, N. Y. (Hydraulic)

BRASS PIPE

See Pipe, Brass and Copper

BRASS TUBING

See Tubing, Brass and Copper

BRASS UNIONS

See Unions, Brass

BRASS VALVES

See Valves, Gate; and Valves, Globe

BRAZING ALLOYS

See Solder (Silver), Brazing Alloys and Fluxes

BRAZING TORCHES

See Torches, Brazing

BREAKERS, VACUUM (For Steam Using Equipment)

Associated Valve Co., North Wales, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
McAlear Mfg. Co., Chicago, Ill.
OPW-Jordan Corp., Cincinnati, O.
Perfecting Service Co., Charlotte, N. C.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Simplex Valve & Meter Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.

BRONZE VALVES

See Valves, Gate; and Valves, Globe

BUILDING INSULATION

See Insulation, Building

BURNERS, GAS, COMMERCIAL AND INDUSTRIAL

Adams Mfg. Co., Cleveland, O.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Aston Products, Inc., Warren, Mich.
Auburn Burner Co., Edgerton, O.
Auburn Foundry Inc., Heating Div., Auburn, Ind.
Babcock & Wilcox Co., The, Boiler Div., Barberton, O.
Barber Mfg. Co., Cleveland, O.
Bard Mfg. Co., Bryan, O.
Best Combustion Equipment Co., Inc., W. N., Little Ferry, N. J.
Bryant Mfg. Co., Indianapolis, Ind.
Burdett Mfg. Co., Chicago, Ill.
Carlin Co., The, Wethersfield, Conn.
Century Engineering Corp., Cedar Rapids, Ia.
Coppus Engineering Corp., Worcester, Mass.
Cox Mfg. Co., Ridgeville, Ind.
Dalzen Mfg. Co., St. Clair, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eisler Engineering Co., Inc., Newark, N. J.
Engineer Co., New York, N. Y.
Enterprise Div., General Metals Corp., Huntington, W. Va.
Erie City Iron Wks., Erie, Pa.
Faber Engineering Co., Inc., Norristown, Pa.
Forney Engineering Co., Dallas, Tex.
Fuelguard Co., Dallas, Tex.
Gold Top Heating, Inc., San Gabriel, Calif.
Gordon & Piatt, Inc., Winfield, Kan.
Haney Burner Div., Southwest Gas Corp., Las Vegas, Nev.
Hastings Air Control, Inc., Omaha, Nebr.
Hauck Mfg. Co., Brooklyn, N. Y.
Industrial Combustion, Inc., Milwaukee, Wis.
Iron Fireman Mfg. Co., Cleveland, O.
Jackson & Church Co., Saginaw, Mich.
Jamieson Mfg. Co., Dallas, Tex.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Johnson Co., S. T., Oakland, Calif.
Johnson Gas Appliance Co., Cedar Rapids, Ia.
Johnston Bros., Inc., Ferrysburg, Mich.
Laharco Industries, Minneapolis, Minn.
Lattner Mfg. Co., P. M., Cedar Rapids, Ia.
Leahy Mfg. Co., Los Angeles, Calif.
Leffel & Co., James, The, Springfield, O.
Liberty Combustion Corp., Syracuse, N. Y.
Lientz Co., B. P., Kansas City, Mo.
Martin Co., Inc., J. O., San Francisco, Calif.
Maxon Premix Burner Co., Muncie, Ind.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Mid-Continent Metal Products Co., Chicago, Ill.
National Airoil Burner Co., Inc., Philadelphia Pa.
Norman Products Co., Inc., Columbus, O.
North American Mfg. Co., Cleveland, O.
Nu-Way Corp., The, Rock Island, Ill.
Orr & Sembower, Inc., Reading, Pa.
Peabody Engrg. Corp., New York, N. Y.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Petro, Cleveland, O.
Power-Flame Div., Inc., Grandview, Mo.
Radiant Heat & Cooling Co., Santa Clara, Calif.
Ransome Torch & Burner Co., Emeryville, Calif.
Ray Oil Burner Co., San Francisco, Calif.
Rayfield-Staffco Burner Co., Chicago, Ill.
Reif-Rexoil, Inc., Buffalo, N. Y.
Research Vacuum Supply Co., Chicago, Ill.
Riley Stoker Corp., Worcester, Mass.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Schurs Burner & Equipment, Inc., South Gate, Calif.
Selas Corp. of America, Dresher, Pa.
Sellers Engineering Co., Chicago, Ill.
Sonner Burner Co., Winfield, Kan.
Standard Fuel Engineering Co., Detroit, Mich.
Staples & Pfeiffer, San Francisco, Calif.
Stout & Sons, David, St. Louis, Mo.
Sullivan Valve & Engineering Co., Butte, Mont.
Superior Combustion Industries, Inc., New York, N. Y.
Surface Combustion Corp., Toledo, O.
Synchronous Flame, Inc., Walworth, Wis.
Todd Shipyards Corp., Products Div., Brooklyn, N. Y.
Utah Hydro Corp., Salt Lake City, Utah.
Vacuum Gas Burner Co., Olean, N. Y.
Wayne Home Equipment Co., Inc., Ft. Wayne, Ind.
Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.
Wickes Boiler Co., The, Saginaw, Mich.
Wisconsin Burners Inc., Madison, Wis.
York-Shipley, Inc., York, Pa.
Zink Co., John, Tulsa, Okla.
Zurn Industries, Inc., Erie, Pa.

BURNERS, GAS, COMMERCIAL AND INDUSTRIAL, COMBINED WITH STOKER OR OVER COAL GRATES

Barber Mfg. Co., Cleveland, O. (impinged jet)
Eclipse Fuel Engineering Co., Rockford, Ill.
Engineer Co., New York, N. Y.
Forney Engineering Co., Dallas, Tex.
Gordon & Piatt, Inc., Winfield, Kan.
Iron Fireman Mfg. Co., Cleveland, O.
Jackson & Church Co., Saginaw, Mich.
Leffel & Co., James, The, Springfield, O.
Lientz Co., B. P., Kansas City, Mo.
Maxon Premix Burner Co., Muncie, Ind.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Mid-Continent Metal Products Co., Chicago, Ill.
Norman Products Co., Columbus, O.
Orr & Sembower, Inc., Reading, Pa.
Riley Stoker Corp., Worcester, Mass.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Utah Hydro Corp., Salt Lake City, Utah
Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.
Wickes Boiler Co., The, Saginaw, Mich.

BURNERS, GAS AND OIL COMBINED, COMMERCIAL AND INDUSTRIAL

Ace Engineering Co., Chicago, Ill.
Babcock & Wilcox Co., Boiler Div., Barberton, O.
Best Combustion Equipment Co., Inc., W. N., Little Ferry, N. J.
Coppus Engineering Corp., Worcester, Mass.
Eclipse Fuel Engineering Co., Rockford, Ill.
Engineer Co., New York, N. Y.
Enterprise Div., General Metals Corp., Huntington, W. Va.
Erie City Iron Wks., Erie, Pa.
Faber Engineering Co., Inc., Norristown, Pa.
Forney Engineering Co., Dallas, Tex.
Gordon & Piatt, Inc., Winfield, Kan.
Hauck Mfg. Co., Brooklyn, N. Y.
Industrial Combustion, Inc., Milwaukee, Wis.
Iron Fireman Mfg. Co., Cleveland, O.
Jackson & Church Co., Saginaw, Mich.
Johnson Co., S. T., Oakland, Calif.
Johnston Bros., Inc., Ferrysburg, Mich.
Lammert & Mann Co., Chicago, Ill.
Leahy Mfg. Co., Los Angeles, Calif.
Leffel & Co., James, The, Springfield, O.
Lientz Co., B. P., Kansas City, Mo.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Mid-Continent Metal Products Co., Chicago, Ill.
National Airoil Burner Co., Inc., Philadelphia, Pa.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
North American Mfg. Co., Cleveland, O.
Orr & Sembower, Inc., Reading, Pa.
Peabody Engineering Corp., New York, N. Y.
Petro, Cleveland, O.
Power-Flame Div., Inc., Grandview, Mo.
Preferred Utilities Mfg. Corp., New York
Ray Oil Burner Co., San Francisco, Calif.
Rayfield-Staffco Burner Co., Chicago, Ill.
Riley Stoker Corp., Worcester, Mass.
Roberts-Gordon Appliance Co., Buffalo, N. Y.
Rockwell Co., W. S., Fairfield, Conn.

Schurs Burner & Equipment, Inc., South Gate, Calif.
Simplex Oil Heating Corp., Philadelphia, Pa.
Sonner Burner Co., Winfield, Kan.
Staples & Pfeiffer, San Francisco, Calif.
Stout & Sons, David, St. Louis, Mo.
Superior Combustion Industries, Inc., New York, N. Y.
Surface Combustion Corp., Toledo, O.
Synchronous Flame, Inc., Walworth, Wis.
Todd Shipyards Corp., Products Div., Brooklyn, N. Y.
Utah Hydro Corp., Salt Lake City, Utah
Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.
Wickes Boiler Co., The, Saginaw, Mich.
Wisconsin Burners, Inc., Madison, Wis.
York-Shipley, Inc., York, Pa.
Zink Co., John, Tulsa, Okla.

BURNERS, NATURAL AND LP GAS, COMBINED, COMMERCIAL AND INDUSTRIAL

Ace Engineering Co., Chicago, Ill.
American-Standard Plumbing & Heating Div., New York, N. Y.
Babcock & Wilcox Co., The, Boiler Div., Barberton, O.
Burdett Mfg. Co., Chicago, Ill.
Century Engineering Corp., Cedar Rapids, Ia.
Eclipse Fuel Engineering Co., Rockford, Ill.
Gold Top Heating, Inc., San Gabriel, Calif.
Gordon & Piatt, Inc., Winfield, Kans.
Hauck Mfg. Co., Brooklyn, N. Y.
Industrial Combustion, Inc., Milwaukee, Wis.
Johnson Gas Appliance Co., Cedar Rapids, Ia.
Lammert & Mann Co., Chicago, Ill.
Leahy Mfg. Co., Los Angeles, Calif.
Leffel & Co., James, The, Springfield, O.
Lientz Co., B. P., Kansas City, Mo.
Maxon Premix Burner Co., Muncie, Ind.
Mid-Continent Metal Products Co., Chicago, Ill.
Mutual Liquid Gas & Equipment Co., Gardena, Calif.
Orr & Sembower, Inc., Reading, Pa.
Power-Flame Div., Inc., Grandview, Mo.
Ransome Torch & Burner Co., Emeryville, Calif.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Rockwell Co., W. S., Fairfield, Conn.
Schurs Burner & Equipment, Inc., South Gate, Calif.
Sonner Burner Co., Winfield, Kans.
Stout & Sons, David, St. Louis, Mo.
Synchronous Flame, Inc., Walworth, Wis.
Utah Hydro Corp., Salt Lake City, Utah
Wickes Boiler Co., The, Saginaw, Mich.
Wisconsin Burners, Inc., Madison, Wis.

BURNERS, OIL, COMMERCIAL AND INDUSTRIAL

Ace Engineering Co., Chicago, Ill. (Rotary)
Aldrich Co., Wyoming, Ill.
American-Standard Plumbing & Heating Div., New York, N. Y.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Auburn Burner Co., Auburn, Ind.
Automatic Burner Corp., Chicago, Ill. (high pressure)
Babcock & Wilcox Co., Boiler Div., Barberton, O.
Beckett Corp., R. W., Elyria, O. (high pressure gun-atomizing)
Best Combustion Equipment Co., Inc., W. N., Little Ferry, N. J.
Carlin Co., The, Wethersfield, Conn.
Century Engrg. Corp., Cedar Rapids, Ia. (high pressure atomizing)
Columbia Boiler Co. of Pottstown, Pottstown, Pa.
Drying System Co., Chicago, Ill. (medium pressure atomizing)
Eclipse Fuel Engineering Co., Rockford, Ill.
Eds-Wil Burner Corp., Chicago, Ill.
Electrol Burner Mfg. Co., Inc., Rutherford, N. J. (high pressure atomizing)
Engineer Co., New York, N. Y.
Enterprise Div., General Metals Corp., Huntington, W. Va. (rotary)
Erie City Iron Wks., Erie, Pa.
Faber Engineering Co., Inc., Norristown, Pa.
Forney Engineering Co., Dallas, Tex. (both steam atomizing & mechanical, high pressure)
General Metals Corp., Adel Div., Huntington, W. Va.
Gilbert & Barker Mfg. Co., West Springfield Mass. (high pressure atomizing)
Haney Burner Div., Southwest Gas Corp. Las Vegas, Nev. (steam atomizing)
Hardinge Oil Burner & Mfg. Co., Chicago Ill.
Hauck Mfg. Co., Brooklyn, N. Y. (low pressure air type and high pressure steam type
Industrial Combustion, Inc., Milwaukee, Wis (low pressure air atomizing sizes from 1 t 150 gph and 720,000 to 21,000,000 max Btu gas input per hr. For boilers up to 480 hp)
Iron Fireman Mfg. Co., Cleveland, O. (Rotary atomizing, high pressure atomizing)
Jackson & Church Co., Saginaw, Mich.
Johnson Co., S. T., Oakland, Calif. (high pressure atomizing; horizontal rotary)
Johnston Bros., Inc., Ferrysburg, Mich.
Kol-Master Corp., Oregon, Ill. (high pressure)
Kresky Mfg. Co., Inc., Petaluma, Calif. (hi-pressure atomizing; also forced-draft vaporizing retort-type)
Lammert & Mann Co., Chicago, Ill. (low pressure air or steam atomization)
Leahy Mfg. Co., Los Angeles, Calif.
Leffel & Co., James, The, Springfield, O.
Lientz Co., B. P., Kansas City, Mo. (steam atomizing)
Maxon Premix Burner Co., Muncie, Ind. (low pressure)
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill. (high pressure atomizing; steam atomizing)
Montag Inc., Portland, Ore.
National Airoil Burner Co., Inc., Philadelphia, Pa. (low pressure, high pressure, steam rotary)
National Oil Burner Co. of N. Y. Inc., Brooklyn, N. Y. (horizontal rotary)
North American Mfg. Co., Cleveland, O. (low & high pressure atomizing; steam atomizing; variable capacity)
Nu-Way Corp., The, Rock Island, Ill.
Orr & Sembower, Inc., Reading, Pa. (air-atomizing) (Capacity range: 20 to 900 hp. Fuels: Light oil, heavy oil or gas or any combination of these.)
Peabody Engrg. Corp., New York, N. Y.
Petro, Cleveland, O. (high pressure and rotary atomizing)
Preferred Utilities Mfg. Corp., New York, N. Y., (Rotary types; from 7½ gph to 175 gph.)
Quiet Automatic Oil Burner Corp., Newark, N. J. (up to 24 gph)
Radiant Utilities Corp., Brooklyn, N. Y.
Ray Oil Burner Co., San Francisco, Calif. (High pressure atomizing and rotary)
Rayfield-Staffco Burner Co., Chicago, Ill. (low pressure atomizing and horizontal rotary)
Reif-Rexoil, Inc., Buffalo, N. Y. (high pressure atomizing .50 to 30 gph. No. 2 oil plus horizontal rotary heavy oil from 2 to 165 gph.)
Riley Stoker Corp., Worcester, Mass.
Roberts-Gordon Appliance Corp., Buffalo, N. Y. (high pressure)
Rockwell Co., W. S., Fairfield, Conn.
Schurs Burner & Equipment, Inc., South Gate, Calif.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Silent Automatic Products, Cleveland, O. (high pressure atomizing, 3-30 gal per hr)
Silent Glow Oil Burner Co., Hartford, Conn. (high pressure atomizing)
Simplex Oil Heating Corp., Philadelphia, Pa. (Low and high pressure atomizing, and horizontal rotary types)
Staples & Pfeiffer, San Francisco, Calif. (High pressure and steam atomizing, variable capacity)
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind. (low pressure and high pressure)
Stout & Sons, David, St. Louis, Mo.
Sun-Ray Burner Mfg. Corp., Jamaica, N. Y. (high pressure)
Superior Combustion Industries, Inc., New York, N. Y. (rotary)
Synchronous Flame, Inc., Walworth, Wis. (High pressure atomizing)
Todd Shipyards Corp., Products Div., Brooklyn, N. Y. (Variable capacity, rotary, pressure atomizing, steam atomizing)
Utah Hydro Corp., Salt Lake City, Utah
Wayne Home Equipment Co., Inc., Ft. Wayne, Ind. (high pressure)
Weatherall Engineers, Inc., Providence, R. I.
Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.
Wickes Boiler Co., The, Saginaw, Mich. (steam atomizing)
Wisconsin Burners Inc., Madison, Wis. (high pressure)
York-Shipley, Inc., York, Pa. (Rotary, high pressure atomizing)
Zink Co., John, Tulsa, Okla.

BURNERS, PULVERIZED COAL, COMMERCIAL AND INDUSTRIAL

American Coal Burner & Wood Stoker Corp., Chicago, Ill.
Babcock & Wilcox Co., Boiler Div., Barberton, O.
Combustion Engineering Inc., New York, N. Y.
Peabody Engineering Corp., New York, N. Y.
Riley Stoker Corp., Worcester, Mass.
Whiting Corp., Harvey, Ill.

BURNERS, PULVERIZED COAL AND GAS, COMBINED, COMMERCIAL AND INDUSTRIAL

Babcock & Wilcox Co., Boiler Div., Barberton, O.
Combustion Engineering Inc., New York, N. Y.
Foster Wheeler Corp., New York, N. Y.
Peabody Engineering Corp., New York, N. Y.
Riley Stoker Corp., Worcester, Mass.

BURNERS, PULVERIZED COAL, GAS AND OIL COMBINED, COMMERCIAL AND INDUSTRIAL

Babcock & Wilcox Co., Boiler Div., Barberton, O.
Combustion Engineering Inc., New York, N. Y.
Engineer Co., New York, N. Y.
Peabody Engineering Corp., New York, N. Y.
Riley Stoker Corp., Worcester, Mass.

BURNERS, PULVERIZED COAL AND OIL, COMBINED, COMMERCIAL AND INDUSTRIAL

Babcock & Wilcox Co., Boiler Div., Barberton, O.
Combustion Engineering Inc., New York, N. Y.
Foster Wheeler Corp., New York, N. Y.
Peabody Engineering Corp., New York, N. Y.
Riley Stoker Corp., Worcester, Mass.

CABINETS FOR AIR CONDITIONERS, BOILERS, ETC.

See Parts For Heating and Air Conditioning Equipment

CABLE, ELECTRIC HEATING

Arvin Industries, Inc., Columbus, Ind.
Ceilheat, Inc., Knoxville, Tenn.
Chester Cable Corp., Subsid. of Tennessee Corp., Chester, N. Y.
Cox & Co., Inc., New York, N. Y.
Dixie Raydiant Electric Heat Corp., Atlanta, Ga.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Essex Wire Corp., Ft. Wayne, Ind.
Everwarm, Inc., Knoxville, Tenn.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
General Electric Co., Wiring Device Dept., Electric Comfort Heating Section, Louisville, Ky.
Meier Electric, Indianapolis, Ind.
Miller Mfg. Co., St. Paul, Minn.
Modernheat Cable Corp., Kingsport, Tenn.
Nelson Electric Mfg. Co., Tulsa, Okla.
Preferred Utilities Mfg. Corp., New York, N. Y.
Radiant Electric Heat Co., Centerville, Ia.
Rentip, Inc., Knoxville, Tenn.
Roberson Inc., Seattle, Wash.
S & C Mfg. Co., Cincinnati, O.
Sunwarm, Inc., Kingsport, Tenn.
Tennessee Plastics, Inc., Johnson City, Tenn.
Wesix Electric Heater Co., San Francisco, Calif.

Wiegand Co., Edwin L., Pittsburgh, Pa.
Zell-Aire Corp., Reading, Pa.

CABLE AND WIRE, THERMOSTAT

Chester Cable Corp., Subsid. of Tennessee Corp., Chester, N. Y.
Gavitt Wire & Cable Co., Div. of Amerace Corp., Brookfield, Mass.
General Controls Co., Glendale, Calif.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
General Electric Co., Wiring Device Dept., Electric Comfort Heating Section, Louisville, Ky.
Roberson Inc., Seattle, Wash.
Wiegand Co., Edwin L., Pittsburgh, Pa.

CALCULATORS, AIR CONDITIONING, HEATING, VENTILATING, AND PIPING; SLIDE RULE

Airserco Mfg. Co., Pittsburgh, Pa.
American Instrument Co., Inc., Silver Spring, Md. (psychrometric calculator)
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Bolind, Inc., Boulder, Colo.
Calculator Specialties Co., Chicago, Ill.
Caliputer, San Diego, Calif. (caliper-scale)
Graphic Calculator Co., Chicago, Ill.
Morton Engineering Service, Paul S., Kalamazoo, Mich. (Btu calculator, area and volume calculator. Area and crackage calculator, Btuh calculator. Heat loss calculation & data sheets — padded. Electrical wattage heat load calculators, air duct, payroll tax calculators and interest calculators.)
Research Publishing Co., Los Angeles, Calif.

CANOPIES, METAL, SUN, REFLECTING

Air Control Products, Inc., Coopersville, Mich.
American Warming & Ventilating Co., Toledo, O.
Bridgeport Brass Co., Hunter Douglas Div., New York, N. Y.
Childers Mfg. Co., Houston, Tex.
Construction Specialties, Inc., Cranford, N. J.
Kawneer Co., Niles, Mich.
Lemlar Mfg. Co., Gardena, Calif.

CAPACITORS, ELECTRICAL, FOR POWER FACTOR CORRECTION

Aerovox Corp., New Bedford, Mass.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Capacitor Dept., Ft. Edward, N. Y.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Mallory & Co., Inc., P. R., Indianapolis, Ind.
Potter Co., The, North Chicago, Ill.
Sangamo Electric Co., Springfield, Ill.
Sprague Electric Co., North Adams, Mass.
Westinghouse Electric Corp., Pittsburgh, Pa.

CAPILLARY TUBING

See Tubing, Capillary, for Refrigerants

CAPS, VENT FLUE

Accurate Sheet Metal & Mfg. Works, Inc., Chicago, Ill.
Acme Mfg. Co., Philadelphia, Pa.
Adams Co., The, Dubuque, Iowa
Adelta Mfg. Co., Inc., Philadelphia, Pa.
Airjet Ventilator Co., San Clemente, Calif.
Ammerman Co., Inc., Stillwater, Minn.
Binks Mfg. Co., Chicago, Ill.
Boston Machine Works Co., Lynn, Mass.
Breidert Co., G. C., San Fernando, Calif.
Champion Furnace Pipe Co., Peoria, Ill.
Corbman Bros., Inc., Philadelphia, Pa.
Enderle, Inc., Ltd., Frank X., Los Angeles.
Excelsior Steel Furnace Co., The, Chicago.
Hart & Cooley Mfg. Co., Holland, Mich.
Inland Steel Products Co., Milwaukee, Wis.
Leslie Welding Co., Inc., Franklin Park, Ill.
Mirror Patented Stove Pipe Co., Hartford, Conn.
Ohio Foundry & Mfg. Co., Steubenville, O.
Oil Equipment Mfg. Corp., New Haven, Conn.
Penn Ventilator Co., Philadelphia, Pa.
Preferred Utilities Mfg. Corp., New York, N. Y.
Robinson Clay Products Co., The, Akron, O.
Tesco, Inc., Tulsa, Okla.
Walker Mfg. & Sales Co., St. Joseph, Mo.
Wallace Co., William, Metalbestos Div., Belmont, Calif.
Waverly Heating Supply Co., Beverly, Mass.
Wood Mfg. Co., A. R., Luverne, Minn.

CARBON DIOXIDE ANALYZERS

See Analyzers, Carbon Dioxide, Portable

CARBON DIOXIDE INDICATORS

See Indicators, Carbon Dioxide, Boiler Room

CARBON MONOXIDE DETECTORS

See Detectors, Carbon Monoxide

CARBON PIPE, TUBING, FITTINGS AND VALVES

See Pipe, Tubing, Fittings and Valves, Carbon and Graphite

CAST IRON PIPE

See Pipe, Cast Iron

CATALOG HOLDERS AND FILES

See Holders and Files, Catalog, for Engineers' and Contractors' Offices

CEILINGS, RADIANT, HEATING AND COOLING, AND ACOUSTICAL CONTROL

Also see Coils and Panels, Radiant Heating and Cooling, Prefabricated

Airtex Corp., Chicago, Ill.
Burgess-Manning Co., Architectural Products Div., Libertyville, Ill.
Johns-Manville Corp., New York, N. Y.
Simplex Ceiling Corp., New York, N. Y.

CEMENT AND COMPOUNDS, PIPE JOINT

Acorn Refining Co., Cleveland, O.
American Sealants Co., Hartford, Conn.
American Solder & Flux Co., Philadelphia, Pa.
Arco Co., The, Cleveland, O.
Armite Laboratories, Los Angeles, Calif.
Atlas Mineral Products Co., Mertztown, Pa.
Babbitt Chemical Co., New Bedford, Mass.
Barrett Div., Allied Chemical Corp., New York, N. Y.
Belmont Smelting & Refining Wks., Inc., Brooklyn, N. Y.
Black & White Chemical Co., New York, N. Y.
Blue Ridge Talc Co., Inc., Henry, Va.
Blue Seal Chemical Co., Roselle Park, N. J.
Cabot, Inc., Samuel, Boston, Mass.
Calbar, Inc., Philadelphia, Pa.
Carey Mfg. Co., Philip, Cincinnati, O.
Crane Co., Chicago, Ill.
Crane Packing Co., Morton Grove, Ill.
Croll & Son, Jesse G., Philadelphia, Pa.
Dixon Crucible Co., Joseph, Jersey City, N. J.
Dodge Fibers Corp., Hoosick Falls, N. Y. (pipe thread tape)
Fibercast Co., Sand Spring, Okla.
Flexrock Co., Philadelphia, Pa.
Garlock, Inc., Palmyra, N. Y.
Gasoilair Equipment Co., New Haven, Conn.
Gilbreth Co., The, Philadelphia, Pa.
Goodrich Industrial Products Co., B. F., Akron, O.
Greene, Tweed & Co., North Wales, Pa.
Grinnell Co., Inc., Providence, R. I.
Hercules Chemical Co., Inc., New York, N. Y.
Highside Chemicals, Inc., Clifton, N. J.
Horn Companies, A. C., Subsidiary of Sun Chemical Corp., New York, N. Y.
Industrial Plastic Fabricators, Norwood, Mass.
Jet-Lube, Inc., Burbank, Calif.
Johns-Manville Corp., New York, N. Y.
Kenite Laboratory, Madison, N. J.
Lake Chemical Co., Chicago, Ill.
Macksons Co., New York, N. Y.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Moran Paint Co., Xenia, O.
Nebel Mfg. Co., Cleveland, O.
Parker Fittings & Hose Div., Parker-Hannifin Corp., Cleveland, O.
Pecora Inc., Philadelphia, Pa.
Permatex Co., Inc., Long Island, N. Y.
Preferred Utilities Mfg. Corp., New York, N. Y.
Quigley Co., Inc., New York, N. Y.
Radiator Specialty Co., Charlotte, N. C.
Rectorseal Div., Rector Well Equipment Co., Houston, Tex.
Robinson Clay Product Co., The, Akron, O.
Rutland Fire Clay Co., Rutland, Vt.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Sauereisen Cements Co., Pittsburgh, Pa.
Saverite Engineering Co., Hoboken, N. J.
Schwartz Chemical Co., Inc., Long Island City, N. Y. (for joining plastic pipe)
Sexauer Mfg. Co., Inc., J. A., New York, N. Y.
Smooth-On Mfg. Co., Jersey City, N. J.
Sulflo, Inc., Elizabeth, N. J.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.
Tube Turns Plastics, Inc., Louisville, Ky. (UPVC pipe)
United States Rubber Co., New York, N. Y.
United States Stoneware Co., New York, N. Y.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Whitlam Mfg. Co., J. C., Wadsworth, O.
X Laboratories, Inc., New York, N. Y.
X-Pando Corp., Long Island City, N. Y.

CEMENT, FURNACE

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Armstrong Contracting & Supply Corp., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Babcock & Wilcox Co., Boiler Div., Barberton, O.
Botfield Refractories Co., Philadelphia, Pa.
Carey Mfg. Co., Philip, Cincinnati, O.
Clinton Metallic Paint Co., Clinton, N. Y. (Asbestos)
Dixon Crucible Co., Joseph, Jersey City, N. J.
France Refractories Co., J. H., Snow Shoe, Pa.
Grant Wilson, Inc., Chicago, Ill.
Green Fire Brick Co., Mexico, Mo.
Hercules Chemical Co., Inc., New York, N. Y.
Johns-Manville Corp., New York, N. Y.
Lastik Paint, Inc., Pittsburgh, Pa.
Nebel Mfg. Co., Cleveland, O.
Nicolet Industries, Inc., Florham Park, N. J.
Norton Co., Worcester, Mass.
Pecora Inc., Philadelphia, Pa.
Plastic Products Co., Detroit, Mich.
Plibrico Co., Chicago, Ill.
Pyrolite Products Co., Cleveland, O.
Quigley Co., Inc., New York, N. Y.
Refractory & Insulation Corp., New York, N. Y.
Rex Clay Products Co., Walled Lake, Mich.
Robinson Clay Product Co., The, Akron, O.
Rutland Fire Clay Co., Rutland, Vt.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Sauereisen Cements Co., Pittsburgh, Pa.
Smooth-On Mfg. Co., Jersey City, N. J.
Standard Asbestos Mfg. Co., Chicago, Ill.
Standard Fuel Engineering Co., Detroit, Mich.
Taylor Sons Co., Charles, Cincinnati, O.

CEMENT, INSULATING

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Armstrong Contracting & Supply Corp., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Atlas Mineral Products Co., Mertztown, Pa.
Baldwin-Ehret-Hill, Inc., Trenton, N. J. (mineral wool)
Bigelow Liptak Corp., Detroit, Mich.
Bird-Archer Co., Philadelphia, Pa.
Botfield Refractories Co., Philadelphia, Pa.
Carey Mfg. Co., Philip, Cincinnati, O.
Columbia Cement Co., Inc., Brooklyn, N. Y.
Eagle-Picher Co., Cincinnati, O.
Forty-Eight Insulations, Inc., Aurora, Ill.
France Refractories Co., J. H., Snow Shoe, Pa.
Grant Wilson, Inc., Chicago, Ill.

Green Fire Brick Co., Mexico, Mo.
International Vermiculite Co., Girard, Ill.
Johns-Manville Corp., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Moore, Inc., Goodloe E., Danville, Ill.
Mortell Co., J. W., Kankakee, Ill.
Mundet Cork Corp., North Bergen, N. J.
Nelson Mfg. Co., B. F., Minneapolis, Minn.
Nicolet Industries, Inc., Florham Park, N. J.
North American Asbestos Corp., Chicago, Ill.
Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif. (85% magnesia)
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Plibrico Co., Chicago, Ill.
Poe Co., C. W., Cleveland, O.
Quigley Co., Inc., New York, N. Y.
Refractory & Insulation Corp., New York.
Rex Clay Products Co., Walled Lake, Mich.
Ruberoid Co., New York, N. Y.
Rutland Fire Clay Co., Rutland, Vt.
Sauereisen Cements Co., Pittsburgh, Pa
Smith & Kanzler Corp., Linden, N. J
Standard Asbestos Mfg. Co., Chicago, Ill.
Standard Fuel Engineering Co., Detroit, Mich.
Thermold Products Co., Grandview, Mo.
United States Mineral Wool Co., Stanhope, N. J.
Zonolite Co., Chicago, Ill.

CENTRIFUGAL PUMPS

See Pumps, Centrifugal

CERAMIC PIPE

See Pipe, Stoneware

CHAIN DRIVES

See Drives, Chain

CHAMBERS, COMBUSTION, PREFORMED

Armstrong Cork Co., Lancaster, Pa.
Barclay, Inc., Robert, Chicago, Ill.
Bemco, Inc., North Hollywood, Calif.
Boston Machine Works Co., Lynn, Mass.
France Refractories Co., J. H., Snow Shoe, Pa.
Gem Clay Forming Co., Sebring, O.
Grant Wilson, Inc., Chicago, Ill.
Green Fire Brick Co., Mexico, Mo.
Lindy Heaters, Inc., Bronx, N. Y.
Monogram Products Co., Inc., Philadelphia, Pa.
Oil Equipment Mfg. Corp., New Haven, Conn.
Preferred Utilities Mfg. Corp., New York, N. Y.
Refractory & Insulation Corp., New York, N. Y.
Rex Clay Products Co., Walled Lake, Mich.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Shenango Refractories, New Castle, Pa.

CHAMBERS, TEST, CONTROLLED TEMPERATURE AND HUMIDITY

American Instrument Co., Inc., Silver Spring, Md.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Auto-Control Laboratories, Inc., Los Angeles, Calif.
Drying Systems Co., Chicago, Ill.
Galloway Co., G. W., Arcadia, Calif.
Reco Products Div., Recony Corp., New York, N. Y.
Tenney Engineering, Inc., Union, N. J.
Thompson Research & Mfg. Co., Davenport, Fla.
York Div., Borg-Warner Corp., York, Pa.

CHANGERS, SPEED, HYDRAULIC COUPLING

American-Standard Industrial Div., Detroit, Mich.
Link-Belt Co., Chicago, Ill.
Twin Disc Clutch Co., Rockford, Ill.

CHANGERS, SPEED, MAGNETIC

Allis Co., Louis, The, Milwaukee, Wis.
Century Electric Co., St. Louis, Mo.
Doerr Electric Corp., Cedarburg, Wis.
Electric Machinery Mfg. Co., Minneapolis, Minn.
Electro-Dynamic Div., General Dynamics Corp., Bayonne, N. J.
Janette Mfg. Co., Morton Grove, Ill.

CHANGERS, SPEED, MECHANICAL

Abart Gear & Machine Co., Chicago, Ill.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Allis Co., Louis, The, Milwaukee, Wis.
Boston Gear Works, Quincy, Mass.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Cleveland Worm & Gear Div., Eaton Mfg. Co., Cleveland, O. (speed variator)
Custanite Corp., Brooklyn, N. Y.
Dodge Mfg. Corp., Mishawaka, Ind.
Doerr Electric Corp., Cedarburg, Wis.
Falk Corp., Milwaukee, Wis.
Graham Transmissions, Inc., Menomonee Falls, Wis.
Horton Mfg. Co., Inc., Minneapolis, Minn.
Lewellen Mfg. Co., Columbus, Ind.
Lima Electric Motor Co., Inc., The, Lima, O.
Link Belt Co., Chicago, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Maurey Mfg. Corp., Chicago, Ill.
Morse Chain Co., Ithaca, N. Y.
Nason Co., Clarkston, Mich. (belt driven)
Philadephia Gear Corp., King of Prussia, Pa.
Reeves Pulley Co., Div. of Reliance Electric & Engineering Co., Columbus, Ind.
Reliance Electric & Engineering Co., Cleveland, O. (electrical & mechanical drives)
Speed Selector Inc., Chagrin Falls, O.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.
U. S. Electrical Motors, Inc., Los Angeles, Calif.
Westinghouse Electric Corp., Pittsburgh, Pa.
Woods Sons Co., T. B., Chambersburg, Pa.
Worthington Corp., Harrison, N. J.
Zurn Industries, Inc., Erie, Pa. (synchronizing friction clutch)

CHARGING PANEL FOR REFRIGERANTS

See Pumps, Refrigerant Transfer

CHASERS, PIPE AND BOLT

Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O.
Landis Machine Co., Inc., Waynesboro, Pa.
Nye Tool Co., Chicago, Ill.
Oster Mfg. Co., Wickliffe, O.
Owatonna Tool Co., Owatonna, Minn.
Ridge Tool Co., Elyria, O.
Saunders Mfg. Co., Yonkers, N. Y.
Toledo Pipe Threading Machine Co., Toledo, O.

CHASERS, THREADING DIE

Airserco Mfg. Co., Pittsburgh, Pa.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O.
Erie Tool Works, Erie, Pa.
Landis Machine Co., Inc., Waynesboro, Pa.
Nye Tool Co., Chicago, Ill.
Oster Mfg. Co., Wickliffe, O.
Owatonna Tool Co., Owatonna, Minn.
Ridge Tool Co., Elyria, O.
Saunders Mfg. Co., Yonkers, N. Y.
Snap-on Tools Corp., Kenosha, Wis.
Toledo Pipe Threading Machine Co., Toledo, O.

CHECK VALVES

See Valves, Check

CHILLERS, WATER, FOR AIR CONDITIONING AND REFRIGERATION

Acme Industries, Inc., Jackson, Mich.
Alstrom Corp., New York, N. Y.
American-Standard Industrial Div., Detroit, Mich.
Arkla Air Conditioning Corp., Little Rock, Ark.
Armstrong Co., Richard M., West Chester, Pa.
Bell & Gossett Co., Morton Grove, Ill.
Brown Products Corp., Union, N. J.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Cool-Ette, Inc., Detroit, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dole Refrigerating Co., Chicago, Ill.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Ellis & Watts Products, Inc., Cincinnati, O.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Frick Co., Waynesboro, Pa.
Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Griscom-Russell Co., The, Massillon, O.
Heat-Exchangers, Inc., Chicago, Ill.
Heat-X Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Heatron, Inc., York, Pa.
Howe Ice Machine Co., Chicago, Ill.
Hydrotherm, Inc., Northvale, N. J.
I.C.E.D., Inc., St. Petersburg, Fla.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
King Zeero Co., The, Chicago, Ill.
Kritzer Products Div., Peerless of America, Inc., Chicago, Ill.
McMillan Comfortaire, Inc., Jacksonville, Fla.
National-U.S. Radiator Div., Crane Co., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Peerless of America, Inc., Chicago, Ill.
Process Engineering, Inc., Methuen, Mass.
Reco Products Div., Recony Corp., New York, N. Y.
Schancke, Inc., Evansville, Ind.
Sims Co., Erie, Pa.
Taco Heaters, Inc., Cranston, R. I.
Temprite Products Corp., Birmingham, Mich.
Trane Co., The, LaCrosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
Typhoon Heat Pump Div., Hupp Corp., Tampa, Fla.
Vic Mfg. Co., Minneapolis, Minn.
Vilter Mfg. Co., The, Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.
Weather King of Florida, Inc., Orlando, Fla.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J. (3 - 20 tons)
Western Supply Co., Hutchinson, Kans.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whitlock Mfg. Co., W. Hartford, Conn.
Worthington Corp., Harrison, N. J.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.
Yula Corp., Bronx, N. Y.

CHILLERS, WATER, PACKAGED

See Compressors, Refrigerating, Combined with Condenser, Water Chiller, Piping Connections and Controls

CHIMNEYS, PREFABRICATED

See Stacks and Chimneys, Industrial, Prefabricated

CHLORINATORS, WATER

American Sanitary Mfg. Co., Abingdon, Ill.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bruner Corp., Milwaukee, Wis.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Clayton Mark & Co., Evanston, Ill.
Culligan, Inc., Northbrook, Ill.
Dearborn Chemical Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Hills-McCanna Co., Chicago, Ill.
Myers & Bro. Co., The F. E., Ashland, O.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Radiant Utilities Corp., Brooklyn, N. Y.

Sparkler-Filtrion Corp., North Chicago, Ill.
Uniflow Mfg. Co., Erie, Pa.
Wallace & Tiernan Inc., Belleville, N. J.

CIRCULATORS FOR HOT WATER HEATING SYSTEMS

Bell & Gossett Co., Morton Grove, Ill.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Columbus Steam Pump Works Co., Columbus, O.
Dayton Electric Mfg. Co., Chicago, Ill.
Dunham-Bush, Inc., Hartford, Conn.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Federal Pump Corp., Brooklyn, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis.
Kam Products Corp., Brooklyn, N. Y.
Kraissl Co., Inc., The, Hackensack, N. J.
Metalmaster Corp., Newark, N. J.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Modern Flo-Trol Products Corp., Babylon, N. Y.
Stout & Sons, David, St. Louis, Mo.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, LaCrosse, Wis.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Watts Regulator Co., Lawrence, Mass.
Weil Pump Co., Chicago, Ill.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.

CLAMPS, BEAM, DUCT HANGING

Elcen Metal Products Co., Franklin Park, Ill.
Tinnerman Corp., George A., Cleveland, O.

CLAMPS, BEAM, PIPE HANGING

Basic Engineers, Inc., Sharpsburg, Pa.
Blaw Knox Co., Power Piping Div., Pittsburgh, Pa.
Carpenter & Paterson, Inc., Cambridge, Mass.
Crawford Co., Chicago, Ill.
Elcen Metal Products Co., Franklin Park, Ill.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Gateway Engineering Co., Chicago, Ill.
Globe Products, Huppower Div., Hupp Corp., Detroit, Mich.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Providence, R. I.
Holub Industries, Inc., Sycamore, Ill.
Industrial Tubular Equipment Co., Div. of Idaho Maryland Industries, Inc., North Hollywood, Calif.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Minerallac Electric Co., Chicago, Ill.
Modern Hanger Corp., The, Cleveland, O.
Moore, Inc., Goodhoe E., Danville, Ill.
Mult-A-Frame Corp., Detroit, Mich.
National Valve & Mfg. Co., Pittsburgh, Pa.
Paine Co., Addison, Ill.
Rockwood Sprinkler Co., Worcester, Mass.
Steel City Electric Co., Pittsburgh, Pa.
Unistrut Products Co., Chicago, Ill.

CLAMPS, HOSE AND TUBING

Aeroquip Corp., Marman Div., Los Angeles.
Allen Mfg. Co., W. D., Bellwood, Ill.
Band-It Co., Denver, Colo.
Binks Mfg. Co., Chicago, Ill.
Breeze Corporations, Inc., Union, N. J.
Campbell Mfg. Co., Inc., Boyertown, Pa.
Chicago Pneumatic Tool Co., New York.
Circle Clamp Div., Cuyahoga Products Corp., Cleveland O.
Commercial Plastic Co., Chicago, Ill.
Continental Rubber Wks., Erie, Pa.
Corbin Hose Clamp Div., American Hardware Corp., New Britain, Conn.
Federal Laboratories, Inc., Saltsburg, Pa.
Flexible Tubing Corp., Guilford, Conn.
Goodall Rubber Co., Trenton, N. J.
Holub Industries, Inc., Sycamore, Ill.
Hose Accessories Co., Philadelphia, Pa.
Ideal Corp., Brooklyn, N. Y.
Instrument Cases Div. of TA Mfg. Corp., Los Angeles, Calif.
Manufacturers Corp., Mansfield, O.
Mueller Brass Co., Port Huron, Mich.
Murry Co., Towson, Md.
Nylon Molding Corp., Garwood, N. J.
Parker Fittings & Hose Div., Parker-Hannifin Corp., Cleveland, O.
Polymer Corp., The Reading, Pa.
Punch-Lok Co., Chicago, Ill.
Research Vacuum Supply Co., Chicago, Ill.
Richo Plastic Co., Chicago, Ill.
Scovill Mfg. Co., Waterbury, Conn.
Star Tubular Products Co., Chicago, Ill.
Thor Power Tool Co., Aurora, Ill.
Tinnerman Corp., George A., Cleveland, O.
United States Rubber Co., New York, N. Y.
Wittek Manufacturing Co., Chicago, Ill.

CLAMPS, PIPE REPAIR

Adams Pipe Repair Products, So. El Monte, Calif.
Adjustable Clamp Co., Chicago, Ill.
Aeroquip Corp., Marman Div., Los Angeles, Calif.
Align-O-Pipe Guide Co., Upper Darby, Pa.
Baker & Co., R. H., Los Angeles, Calif.
Band-It Co., Denver, Colo.
Burlis Products Co., Brooklyn, N. Y.
Chelsea Metal Stamping Co., New York, N. Y.
Chicago Specialty Mfg. Co., Chicago, Ill.
Clow & Sons, Inc., James B., Chicago, Ill.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford Pa.
H & M Pipe Beveling Machine Co., Tulsa, Okla.
Holub Industries, Inc., Sycamore, Ill.
Ideal Corp., Brooklyn, N. Y.
Inner-Tite Div. of Yara Engineering Corp., Elizabeth, N. J.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Morris Coupling & Clamp Co., Kittanning, Pa.
Mueller Co., Decatur, Ill.
Pipe Line Development Co., Cleveland, O.
Ritter Pattern & Casting Co., Inc., New York, N. Y.
Skinner Co., M. B., South Bend, Ind.
Smith-Blair, Inc., South San Francisco, Calif.
Victaulic Co. of America, Elizabeth, N. J.

CLAMPS, PIPE, WELDING

Adjustable Clamp Co., Chicago, Ill.
Aronson Machine Co., Arcade, N. Y. (magnets)
Atlas Welding Accessories Inc., Ferndale, Mich.
Billings & Spencer Co., Hartford, Conn.
Custanite Corp., Brooklyn, N. Y.
Detroit Stamping Co., Detroit, Mich.
Jewel Mfg Co. St Paul Minn.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Lenco, Inc., Jackson, Mo.
Petersen Mfg. Co., DeWitt Nebr
Trindl Products, Ltd., Chicago, Ill.
Williams & Co., J. H., Buffalo, N. Y.

CLEANERS, AIR, ELECTRICAL

See Filters, Air, Electrostatic (with outside power source)

CLEANERS, PIPE LINE, ELECTRICALLY DRIVEN

Ken-Way Corp., Sparta, Wis.
Spartan Tool Div., H. D. Conkey & Co., Chicago, Ill.

CLEANERS, TUBE

Airetool Mfg. Co., Springfield, O.
Bate Soot Blower Div., General Blower Co., Inc., Philadelphia, Pa.
Boiler Equipment Trust, Amherst, Mass.
Chesterton Co., A. W., Everett, Mass.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
Elliott Co., Jeannette, Pa.
Hastings Air Control, Inc., Omaha, Nebr.
Mill-Rose Co., Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Osborn Mfg. Co., Cleveland, O.
Pierce Co., Wm. B., The, Buffalo, N. Y.
Pilley Brush Co., Fort Madison, Ia.
Sellers Injector Corp., Philadelphia, Pa. (hydraulic)
Viking Research Corp., Sheboygan, Wis.
Wilson, Inc., Thomas C., Long Island City.

CLEANERS, VACUUM, FOR BOILERS, DUCTS, Etc.

Ace Sycamore, Inc., Sycamore, Ill.
Black & Decker Mfg. Co., The, Towson, Md.
Cincinnati Fan & Ventilating Co., Cincinnati, O.
Doyle Vacuum Cleaner Co., Grand Rapids, Mich.
Empire Chemical Products Co., Newark, N. J.
Hild Floor Machine Co., Inc., Chicago, Ill.
Ideal Industries, Inc., Sycamore, Ill.
Kent Co., Inc., Rome, N. Y.
National Super Service Co., The, Toledo, O.
Power Cleaning Equipment Corp., Payne, O.
Premier Co., St. Paul, Minn.
Pullman Vacuum Cleaner Co., Boston, Mass.
Spencer Turbine Co., Hartford, Conn.
Truco Masonry Drilling Div., Wheel Trueing Tool Co., Detroit, Mich.

CLEANING COMPOUNDS

See Compounds, Cleaning, Pipe Coil and Condenser

CLEANING COMPOUNDS, AIR FILTER

See Compounds, Cleaning, Air Filter

CLEANING MACHINES, PIPE

See Machines, Pipe Cleaning; Cleaners, Pipe Line, Electrically Driven; Rams, Water, for Cleaning Out Pipe Lines

CLOSURES FOR PROTECTING PIPE AND TUBE FITTINGS

See Plugs, Caps and Closures for Protecting Pipe and Tube Fittings

CLOTH, TREATED, FOR DUST COLLECTORS

American Felt Co., Glenville, Conn.
Bemis Bro. Bag Co., St. Louis, Mo.
Blossom Mfg. Co., Inc., Brooklyn, N. Y.
Canvas Products Co., St. Louis. Mo.
Day Co., The, Minneapolis, Minn.
Industrial Laminates Div., Fabric Distributing Co., New York, N. Y.
Menardi & Co., El Segundo, Calif.
Wheelabrator Corp., Mishawaka, Ind.

CLUTCHES, HYDRAULIC

See Drives, Fluid or Hydraulic, for Power Transmission

COAL BURNERS

See Burners, Pulverized Coal; Stokers

COAL CONVEYORS

See Conveyors, Coal and Ash

COATINGS, PROTECTIVE, FOR METALS

Acme-Fisher Div., Broadway Rubber Corp., Louisville, Ky.
Adams Chemical Corp., El Segundo, Calif. (epoxy)
Adhesive Products Corp., New York, N. Y.
Allied Chemical Corp., Plastics Div., New York, N. Y.
Allied Porcenell, Inc., Chicago, Ill. (vitreous enamel coatings)
Amchem Products, Inc., Ambler, Pa. (rust proofing chemicals)
Amercoat Corporation, South Gate, Calif. (epoxy, zinc, vinyl)
American Hard Rubber Co., Div of Amerace Corp., Butler, N. J. (rubber and plastic)
American Solder & Flux Co., Philadelphia, Pa. (Galvanizing powder)
Anderson-Prichard Oil Co., Oklahoma City, Okla.
Angier Adhesives, Div. of Interchemical Corp., Cambridge, Mass.
Arco Co., The, Cleveland, O. (heavy)
Armstrong Cork Co., Lancaster, Pa. (asphalt for weather & low temperatures)
Atlas Mineral Products Co., Mertztown, Pa. (plastic)
Automotive Rubber Co., Inc., Detroit, Mich. (rubber and plastic)
Barreled Sunlight Paint Co., Providence, R. I.
Barrett Div., Allied Chemical Corp., New York, N. Y. (Pitchbase and asphaltbase)
Bart Mfg. Corp., Belleville, N. J.
Bishopric Products Co., Cincinnati, O. (epoxy-phenolic)

Blue Ridge Talc Co., Inc., Henry, Va.
Borden Chemical Co., Div. of The Borden Co., Coatings & Adhesives Div., Middlesex, N. J.
Brooklyn Paint & Varnish Co., Inc., Brooklyn, N. Y.
Cabot Inc., Samuel, Boston, Mass. (Bituminous black paint)
Calbar Inc., Philadelphia, Pa.
Carboline Co., The, St. Louis, Mo. (corrosion resisting)
Carey Mfg. Co., Philip, Cincinnati, O. (Asphalt and aluminum paints for roofs)
Ceilcote, Inc., Cleveland, O. (resin)
Chem Industrial Co., Brooklyn, O. (anti-rust paint)
Chemical Coatings & Engineering Co., Media, Pa.
Chemical Solvent Co., Birmingham, Ala. (liquid)
Chicago Gasket Co., Chicago, Ill.
Chicago Metallizing Co., Chicago, Ill. (for pipe)
Condenser Service & Engineering Co., Inc., Hoboken, N. J. (Metal spray)
Constad Laboratories, Jamaica, N. Y. (anti-rust paint)
Continental Products Co., Euclid, O. (paint)
Cordo Chemical Corp., Norwalk, Conn.
Corite-Reynolds Corp., Des Plaines, Ill. (plastic)
Coroshield Company, Ltd., New York, N. Y.
Corrosion Control Co., Inc., New York, N. Y.
Corrosite Div., Reliance Paint Co., Brooklyn, N. Y. (vinyl plastic)
Corro-Vent. Inc., Circincinnati, O. (plastic)
Dampney Co., Boston, Mass.
Dearborn Chemical Co., Chicago, Ill. (Rust preventive)
Debevoise Co., The, Brooklyn, N. Y.
Dennis Chemical Co., St. Louis, Mo.
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y. (polyvinyl "Zip-on" covering)
Dixon Crucible Co., Joseph, Jersey City, N. J.
Dow Corning Corp., Midland, Mich.
du Pont de Nemours & Co., E. I., Finishes Div., Wilmington, Del.
Eagle-Picher Co., Cincinnati, O.
Easton R S. Corp., Brooklyn, N. Y.
Ellicott Fabricators, Inc., Baltimore, Md.
Emjay Maintenance Engineers, Rutherford, N. J.
Ervite Corp., Erie, Pa. (porcelain enamel)
Flexrock Co., Philadelphia, Pa.
Flintkote Co., The, New York, N. Y. (Asphalt emulsions)
Flood Co., Hudson, O. (paint additive)
Foster Co., Benjamin, Philadelphia, Pa. (vinyl epoxy)
France Refractories, Co., J. H., Snow Shoe, Pa. (cast iron & steel)
Fuller Co., H. B., St. Paul, Minn. (epoxy)
Garlock, Inc., Palmyra, N. Y. (cementable teflon)
Gates Engineering Co., Wilmington, Del.
General Metals, Inc., Greensboro, N. C. (plastic)
Gibson-Homans Co., Cleveland, O.
Glidden Co., The, Cleveland, O. (alkyds; vinyls; epoxys)
Goodall Rubber Co., Trenton, N. J. (liquid Neoprane)
Goodrich Industrial Products Co., B. F., Akron, O. (rubber)
Guard Coatings Corp., Long Island City, N. Y. (plastic and epoxy)
Hague & Co., Inc., Alfred, Div. of Lacquer & Chemical Corp., Brooklyn, N. Y.
Harco Corp., Cathodic Protection Div., Cleveland, O. (corrosion protection for underground piping, process tanks, storage tanks, and radiant heating piping)
Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
Heresite & Chemical Co., Manitowoc, Wis. (Synthetic rubber, pure phenolic coating, baking type)
Hill Hubbell Co., Cleveland, O. (coating and wrapping for steel pipe)
Horn Companies, A. C., Subsidiary of Sun Chemical Corp., New York, N. Y.
Houghton & Co., E. F., Philadelphia, Pa.
Industrial Finishes Co., Inc., Philadelphia, Pa.
Industrial Metal Protectives, Inc., Dayton, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Insul-Coustic, Inc., Maspeth, Long Island, N. Y.
Interchemical Corp., Finishes Div., Newark, N. J.
Johnson Mfg. Co., Inc., Mt. Vernon, Ia. (galvanizing compound)
Kendall Co., Polyken Sales Div., Chicago, Ill. (tape, plastic)
Knapp Mills, Inc., Long Island City, N. Y. (lead ferralum)
Knight Co., Maurice A., Akron, O. (vinyl plastic base)
Koppers Co., Inc., Pittsburgh, Pa. (coal tar)
Krylon, Inc., Norristown, Pa.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rubber, PVC, neoprene Butyl Hycar)
Lester Laboratories, Inc., Atlanta, Ga.
Lithcote Corp., Melrose Park, Ill. (baked phenolic, epoxy, vinyl, neoprene, plastisol)
Maas & Waldstein Co., Newark, N. J.
Markal Co., Chicago, Ill.
Master Mechanics Co., Cleveland, O.
Metal & Thermit Corp., Rahway, N. J. (plastisol-vinyl phenolic)
Midland Industrial Div., The Harrison Paint & Varnish Co., Canton, O.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Minnesota Mining & Mfg. Co., Adhesives, Coatings & Sealers Div., St. Paul, Minn. (Sound dampening and insulating types as well as for corrosion protection)
Mono-Seal Products, Everett, Mass.
Monroe Co., Inc., Cleveland, O.
Moore & Co., Samuel, Mantau, O. (plastic)
Moran Paint Co., Xenia, O.
Mortell Co., J. W., Kankakee, Ill. (Asphalt)
National Asphalt Corp., Cleveland, O.
National Lead Co., New York, N. Y. (Red lead)
Navan Products Inc., El Segundo, Calif.
Nazar Rubber Co., Toledo, O. (rubber)
Nebel Mfg. Co., Cleveland, O.
Neilson Chemical Co., Detroit, Mich.
Nelson Mfg. Co., B. F., Minneapolis, Minn.
Norton Co., Worcester, Mass. (ceramic)
Oakite Products, Inc., New York, N. Y. (phosphate, chromate)
Octagon Process, Inc., Staten Island, N. Y. (rust preventive oils, rust-proofing compounds)
Ohmlac Paint & Refining Co., Inc., Long Island City, N. Y. (Acid resistant, heat resistant)
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa. (cement)
Penn Galvanizing Co., Philadelphia, Pa. (Galvanizing)
Pennsalt Chemicals Corp., Philadelphia, Pa. (chlorinated hydrocarbon base, and liquid neoprene base)
Permacel, New Brunswick, N. J.
Peters Co., The, Div. of Toledo Paint & Chemical Co., Toledo, O.
Pipeline Coatings & Engineering Co., Los Angeles, Calif.
Pittsburgh Coke & Chemical Co., Pittsburgh, Pa
Pittsburgh Plate Glass Co., Pittsburgh, Pa. (Paint, varnish, lacquer)
Plicoflex, Inc., Los Angeles, Calif. (plastic)
Poe Co., C. W., The, Cleveland, O.
Polymer Corp., The, Reading, Pa. (plastic fusion bond finishes)
Porce-Lin Tank Lining Co., Detroit, Mich.
Presstite Div., American-Marietta Co., St. Louis.
Pyrolite Products Co., Cleveland, O.
Quelcor, Inc., Chester, Pa. (plastic)
Quigley Co., Inc., New York, N. Y.
Ransburg Electro-Coating Corp., Indianapolis, Ind. (electrostatic spray coating processes and equipment)
Reilly Tar & Chemical Corp., Indianapolis, Ind. (Coal tar base)
Rhopac, Inc., Skokie, Ill. (pipe insulation)
Ric-wiL, Inc., Barberton, O. (asphalts, coal tars, resins)
Robertson Co., H. H., Pittsburgh, Pa. (polyester resin)
Rotometals, San Francisco, Calif. (galvanizing repair stick)
Rubber & Plastics Compound Co., New York, N. Y. (anticorrosive coating)
Rusticide Products Co., Cleveland, O.
Rust-Oleum Corp., Evanston, Ill.
Saran Lined Pipe Co., Ferndale, Mich.
Saverite Engineering Co., Hoooken, N. J. (Tank coatings, rust preventive)
Sealed Unit Parts Co., Inc., New York, N. Y. (liquid)
Sheldon & Co., Inc., M. L., New York, N. Y.
Sherwin-Williams Co., The, Cleveland, O.
Shutt Process Equipment Corp., St. Louis.
Solar Aircraft Co., San Diego, Calif. (ceramic)
Solfo Paint Mfg. Co., Trenton, N. J.
Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.
Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga. (Metallic paint)
Special Chemicals Corp., Ossining, N. Y. (Aluminum paint)
Speco, Inc , Cleveland, O.
Standard Oil Co. of California, San Francisco.
Starline Co., Dayton, O.
Steelcote Mfg. Co., St. Louis, Mo.
Tapecoat Co., The, Evanston, Ill. (coal tar protective coating in tape form, for pipe, and pipe joints, pipe fittings, insulated pipe, both underground and above ground)
Thompson and Co., Oakmont, Pa.
Tropical Paint Co., Cleveland, O. (priming paint for iron & zinc)
Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich. (alkyd and epoxy resin)
Turco Products, Inc., Wilmington, Calif.
United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J. (fluorocarbon plastics)
United States Rubber Co., New York, N. Y. (rubber plastic, liquid plastic)
United States Stoneware Co., New York, N. Y. (Corrosion resistant)
United States Stoneware Co., Plastics & Synthetics Div., Akron, O. (vinyls)
Vimasco Corp., Nitro, W. Va. (vinyl)
Watson-Standard Co., Pittsburgh, Pa.
Wilbur & Williams Co., Norwood, Mass. (epoxy, rubber)
Wolfe-Kote Co., Inc., Sheboygan, Wis.
X-Pando Corp., Long Island City, N. Y. (epoxy)

COCKS, BOILER GAGE

Bordo Co., Inc., L. J., Glenside, Pa.
Brabant Brass Mfg. Co., Detroit, Mich.
Crane Co., Chicago, Ill.
Ernst Water Column & Gauge Co., Livingston, N. J.
Huyette Co., Inc., Paul B., Philadelphia, Pa.
Keckley Co., O. C., Skokie, Ill.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O.
Reliance Gauge Column Co., Cleveland, O.
Shank Co., Cyrus, Chicago, Ill.
Strahman Valves, Inc., Florham Park, N. J.
Swift Lubricator Co., The, Elmira, N. Y.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.

COILS, CONDENSATION

Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Buxton Mfg. Co., Dover, N. J.
Dean Products, Inc., Brooklyn, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
General Fittings Co., East Greenwich, R. I.
Heatron, Inc., York, Pa.
Lewis & Saunders, Inc., Lakeport, N. H.
Old Dominion Iron & Steel Corp., Richmond, Va.
Roessing Mfg. Co., Pittsburgh, Pa.
Rome-Turney Radiator Co., Rome, N. Y.
Star Tubular Products Co., Chicago, Ill.
Superior Radiator Corp., Minneapolis, Minn.
Trane Co., The, La Crosse, Wis.
Young Radiator Co., Racine, Wis.
Yula Corp., Bronx, N. Y.

COILS, COOLING

See Surface, Finned, Cooling

COILS, DIRECT EXPANSION

See Surface, Finned, Cooling

COILS, FINNED

See Surface, Finned, Cooling; Surface, Finned, Heating

COILS, HEATING

See Surface, Finned, Heating

COILS, FOR HOT WATER STORAGE TANKS

Adams Co., The, Dubuque, Ia.
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Alstrom Corp., New York, N. Y.
American Cooling Tower Co., Kansas City, Mo.
American Tube & Controls Inc., West Warwick, R. I.
Bell & Gossett Co., Morton Grove, Ill.
Bernstrom, Inc., C. R., Providence, R. I.
Bros Inc., Minneapolis, Minn.
Brown Fintube Co., Elyria, O.
Buxton Mfg. Co., Dover, N. J.
Cobra Pipe Supply & Coil Co., Inc., Elmwood, Conn.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dean Products, Inc., Brooklyn, N. Y.
Dormont Mfg. Co., Pittsburgh, Pa.
Ellicott Fabricators, Inc., Baltimore, Md.
Federal Boiler Co., Inc., Midland Park, N. J.
General Fittings Co., East Greenwich, R. I.
Killebrew Engineering Corp., St. Louis, Mo.
Lewis & Saunders, Inc., Lakeport, N. H.
Lindy Heaters, Inc., Bronx, N. Y.
Manning & Lewis Engineering Co., Union, N. J.
Mar-Coil Heater Co., Union, N. J.
National Pipe Bending Co., New Haven, Conn.
Old Dominion Iron & Steel Corp., Richmond, Va.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Pittsburgh Nipple Wks., Inc., Pittsburgh, Pa.
Pittsburgh Standard Products Co., Verona, Pa.
Quaker City Iron Wks., Philadelphia, Pa.
Queen City Engineering Co., Charlotte, N. C
Raypak Co., Inc., El Monte, Calif.
Rempe Co., Chicago, Ill.
Republic Products Co., Philadelphia, Pa.
Richmond Engineering Co., Richmond, Va.
Roessing Mfg. Co., Pittsburgh, Pa.
Rome-Turney Radiator Co., Rome, N. Y.
Sales Div., Murray W., Detroit, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.
Sims Co., Erie, Pa.
Star Tubular Products Co., Chicago, Ill.
Taco Heaters, Inc., Cranston, R. I.
Tranter Mfg., Inc., Lansing, Mich.
Water Tube Boiler & Tank Co., Chicago, Ill.
Western Piping & Engineering Co., Inc., San Francisco, Calif.
Whitlock Mfg. Co., W. Hartford, Conn
Yula Corp., Bronx, N. Y.

COILS AND PANELS, RADIANT HEATING AND COOLING, PREFABRICATED

Also see Ceilings, Radiant Heating and Cooling, and Acoustical Control

Anaconda American Brass Co., Waterbury, Conn.
Atlantic Pipe Bending and Fabricating Corp., Moonachie, N. J.
Bernstrom, Inc., C. R., Providence, R. I.
Burgess-Manning Co., Architectural Products Div., Libertyville, Ill. (also for radiant cooling)
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Cobra Pipe Supply & Coil Co., Inc., Elmwood, Conn.
Dean Products, Inc., Brooklyn, N. Y.
Dole Refrigerating Co., Chicago, Ill.
Fricke, Fred J., Albuquerque, N. M.
Heat & Power Corp., Baltimore, Md.
Knapp Mills, Inc., Long Island City, N. Y. (lead clad)
Kritzer Radiant Coils, Inc., Batavia, Ill.
Nesbitt, Inc., John J., Philadelphia, Pa.
Olin Mathieson Chemical Corp., Metals Div., East Alton, Ill. (coils and panels, roll-bond heating and cooling, metal panels incorporating fluid passages)
Panel Heat, Inc., Coplague, N. Y.
Price Brothers, Dayton, O. (concrete slabs with openings for air travel or for hot water coils)
Radiant Heat and Cooling Co., Santa Clara, Calif.
Roessing Mfg. Co., Pittsburgh, Pa.
Sawhill Tubular Products, Inc., Sharon, Pa.
Taylor Engineering Corp., Detroit, Mich.
Thermon Mfg. Co., Houston, Tex.
Tranter Mfg. Inc., Lansing, Mich.
Wallace Supplies Mfg. Co., Chicago, Ill.

COILS, PIPE

Albert Pipe & Supply Co., Inc., Brooklyn, N. Y.
American Cooling Towers Co., Kansas City, Mo.
American Smelting & Refining Co., Federated Metals Div., New York, N. Y. (lead, lead covered and lead alloy)
Atlantic Pipe Bending and Fabricating Corp., Moonachie, N. J.
Blaw Knox Co., Power Piping Div., Pittsburgh, Pa.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Chicago Nipple Mfg. Co., Oak Park, Ill.
Cobra Pipe Supply & Coil Co., Inc., Elmwood, Conn.
Crane Co., Chicago, Ill.
Dean Products, Inc., Brooklyn, N. Y.
Division Lead Co., Summit, Ill.
Frick Co., Waynesboro, Pa.
Grinnell Co., Inc., Providence, R. I.
Harris & Co., Arthur, Chicago, Ill.
Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
Heil Process Equipment Corp., Cleveland, O. (Impervious Graphite)
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
Kopperman & Sons, Inc., Joseph, Philadelphia, Pa.
Lead Lined Iron Pipe Co., Wakefield, Mass. (lead covered)
Lewis & Saunders, Inc., Lakeport, N. H.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
Mitchell & Co., Inc., W. K., Philadelphia, Pa.
Mueller Brass Co., Port Huron, Mich.
National Pipe Bending Co., New Haven, Conn.
Niagara Blower Co., New York, N. Y.
Ohio Pipe Bending & Machine Co., Cleveland, O.
Old Dominion Iron & Steel Corp., Richmond, Va.
Philadelphia Pipe Bending Co., Philadelphia.
Pittsburgh Standard Products Co., Verona, Pa.
Reco Products Div., Recony Corp., New York, N. Y.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Roessing Mfg. Co., Pittsburgh, Pa.
Sales Div., Murray W., Detroit, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.
Shaw-Kendall Engineering Co., Toledo, O.
Star Tubular Products Co., Chicago, Ill.
Swan Engineering Co., Bloomfield, N. J.
Taylor Engineering Corp., Detroit, Mich.
Thermon Mfg. Co., Houston, Tex.
Tranter Mfg., Inc., Lansing, Mich.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Wallace Supplies Mfg. Co., Chicago, Ill.
Western Piping & Engineering Co., Inc., San Francisco, Calif.
Whitlock Mfg. Co.. W. Hartford, Conn.
York Div., Borg-Warner Corp., York, Pa.

COLLECTION, DUST AND FUME, ULTRASONIC

Narda Ultrasonics Corp., Westbury, Long Island, N. Y.

COLLECTORS, DUST

Aerotec Corp., The, Greenwich, Conn. (mechanical and electrical)
Aget Mfg. Co., Adrian, Mich. (cyclone; cloth-filter types)
Air Pollution Control Div., John Wood Co., Bernardsville, N. J. (cyclone)
Allington & Curtis Mfg. Co., Saginaw, Mich. (centrifugal & bag)
American Air Filter Co., Inc., Louisville, Ky.
American Blow Pipe Co., Chicago, Ill. (shavings and sawdust, wet and dry type, buffing and polishing)
American-Standard Industrial Div., Detroit, Mich. (centrifugal and electrostatic)
Baker Co., Inc., The, Biddeford, Me. (portable)
Banister Co., Inc., Cambridge, Mass. (centrifugal-dry and wet)
B-I-F Industries, Omega Div., Providence, R. I. (bag type)
Blower Application Co., Milwaukee, Wis. (cyclone)
Bubar Dust Systems, Old Lyme, Conn. (mechanical)
Buell Engineering Co., Inc., New York, N. Y. (cyclonic, electrostatic)
Buffalo Forge Co., Buffalo, N. Y. (wet & dry)
Carolina Blower Co., Inc., Greensboro, N. C. (cyclone)
Centri-Spray Corp., Livonia, Mich. (Wet type)
Cincinnati Electrical Tool Co., The, Cincinnati, O. (self contained)
Cincinnati Fan & Ventilating Co., Cincinnati.
David-Ludwig Co., Detroit, Mich.
Day Co.. The, Minneapolis, Minn. (cyclones & filters)
DeVilbiss Co., The, Toledo, O.
DeVilbiss Metal Fabricators Co., Detroit, Mich.
Ducon Co., Inc., The, Mineola, N. Y. (Cyclone, centrifugal wash, and bag type)
Dust Filter Co., Chicago, Ill. (wet)
Dust Suppression & Engineering Co., Lake Orion, Mich.
Dustender Co., Ann Arbor, Mich.
Dustex Corp., Buffalo, N. Y. (mechanical)
Empire Chemical Products Co., Newark, N. J.
Farr Co., Los Angeles, Calif. (cyclonic)
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex. (cyclone)
Goethel Sheet Metal Wks., Inc., Alfred, Milwaukee, Wis.
Green Fuel Economizer Co., Inc., The, Beacon, N. Y (dry type)
Griffin & Co., Inc., Louisville, Ky. (cyclone)
Hammond Machinery Builders, Inc., Kalamazoo, Mich.
Johnson March Corp., Philadelphia, Pa.
Joy Mfg. Co., Pittsburgh, Pa. (wet impingement)
Kice Metal Products Co., Wichita, Kans. (cyclone type)
Kirk & Blum Mfg. Co., Cincinnati, O. (cyclone)
Koppers Co., Inc., Pittsburgh, Pa. (mechanical)
Koppers Company, Inc., Metal Products Div., Baltimore, Md. (electrostatic)
Lumm Co., A. H., Toledo, O.
Mahon Co., R. C., The, Detroit, Mich. (dry inertia, air washers, fog filters)
Majac, Inc., Pittsburgh, Pa. (power driven)
National Dust Collector Corp., Chicago, Ill. (wet type)
Newcomb-Detroit Co., Detroit, Mich. (recirculating spray tube)
Northern Blower Co., Cleveland, O.
Pangborn Corp., Hagerstown, Md. (cloth filter and wet type)
Peabody Engineering Corp., New York, N. Y. (wet)
Puhl & Hepper Mfg. Co., Inc., St. Louis, Mo.
Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Summit, N. J. (filter bag)
Research-Cottrell, Inc., Bound Brook, N. J. (electrostatic & mechanical)
Ruemelin Mfg. Co., Milwaukee, Wis. (cloth bag type)
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Schmieg Industries, Inc., Detroit, Mich. (wet type)
Schneible Co., Claude B., Detroit, Mich. (wet and dry type)
Shutt Process Equipment Co., St. Louis, Mo.
Sly Mfg. Co., W. W., Cleveland, O. (cloth bag type)
Spencer Turbine Co., Hartford, Conn.
Sprout-Waldron & Co., Inc., Muncy, Pa.
Torit Mfg. Co., St. Paul, Minn. (cloth filter and centrifugal separator)
United Sheet Metal Co., Inc., Columbus, O. (cyclone)

United States Electrical Tool Co., Cincinnati, O. (for machinery)
Universal Gear Service Corp., Detroit, Mich. (for portable industrial applications)
Vacu-Blast Co., Inc., Belmont, Calif. (wet type)
Wagner Awning & Mfg. Co., Cleveland, O. (Dust recovery bags)
Wallace & Tiernan, Inc., Belleville, N. J. (floor & hopper-mounted)
Western Blower Co., Seattle, Wash.
Western Precipitation Corp., Los Angeles, Calif.
Wheelabrator Corp., Mishawaka, Ind. (cloth-tube and wet types)
Winkler & Sons, Inc., A. E., Milwaukee, Wis. (cyclone)
Young & Bertke Co., Cincinnati, O. (cyclone type)
Zack Co., The, Chicago, Ill.

COLLECTORS, MIST

Aget Mfg. Co., Adrian, Mich.
Cincinnati Electrical Tool Co., Cincinnati, O.
Cincinnati Fan & Ventilating Co., Cincinnati, O.
Dustender Co., Ann Arbor, Mich.
Hammond Machinery Builders, Inc., Kalamazoo, Mich.
National Dust Collector Corp., Chicago, Ill. (wet type)
Research-Cottrell, Inc., Bound Brook, N. Y.
Schneible Co., Claude B., Detroit, Mich.
Southern Plastics Co., Columbia, S. C.
Torit Mfg. Co., St. Paul, Minn.

COLORIMETERS

American Instrument Co., Inc., Silver Spring, Md.
Bausch & Lomb Optical Co., Rochester, N. Y.
Ellison Draft Gage Co., Chicago, Ill.
EPIC, Inc., New York, N. Y.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Manufacturers Engineering & Equipment Corp., Hatboro, Pa.
Will Corp., Rochester, N. Y.

COMBUSTION CHAMBERS

See Chambers, Combustion, Preformed

COMBUSTION CONTROL

See Controls, Draft, Barometric; Regulators, Draft, Combustion; Systems, Combustion Control

COMBUSTION RECORDERS

See Recorders, Carbon Dioxide

COMBUSTION TESTING KITS

See Kits, Combustion Testing; Analyzers, Carbon Dioxide, Portable; Indicators, Smoke; Testers, Smoke

COMPOUNDS, AIR FRESHENING

Acme Chemical Co., Milwaukee, Wis.
Aireactor Corp., New York, N. Y.
Airkem, Inc., New York, N. Y.
Ampion Corp., Long Island City, N. Y.
Barnebey-Cheney Co., Columbus, O.
Easton R. S. Corp., Brooklyn, N. Y.
Lord & Clark Co., Inc., Boston, Mass.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Tankit Co., The, Newark, N. J.

COMPOUNDS, ANTI-FREEZE, FOR SNOW MELTING COILS

Dow Chemical Co., The, Midland, Mich.
Houston Chemical Corp., New York, N. Y.
Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

COMPOUNDS, BOILER CLEANING

Agnew & Tomlinson, Long Island City, N. Y.
American K. A. T. Corp., Subsidiary of Magnus Chemical Co., Inc., Garwood, N. J.
American Sand-Banum Co., Inc., Merrick, N. Y.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Berna Corp., Long Island City, N. Y.
Bird-Archer Co., Philadelphia, Pa.
Black & White Chemical Co., New York, N. Y.
Blue Seal Chemical Co., Roselle Park, N. J.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Cannon Chemical Co., Inc., Cambridge, Mass.
Chemical Solvent Co., Birmingham, Ala.
Clayton Mfg. Co., El Monte, Calif.
Continental Products Co., Euclid, O.
Dearborn Chemical Co., Chicago, Ill.
Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
Drew & Co., Inc., E. F., New York, N. Y.
Dow Chemical Co., The, Midland, Mich.
Easton R. S. Corp., Brooklyn, N. Y.
Empire Chemical Products Co., Newark, N. J.
Erlen Products Co., Burbank, Calif.
Gotham Refining Chemical Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Heller Laboratories, Inc., Leonia, N. J.
Hercules Chemical Co., Inc., New York, N. Y.
Houghton & Co., E. F., Philadelphia, Pa.
Ionac Chemical Co., The, Div. of Pfaudler Permutit, Inc., Birmingham, N. J.
Kenite Laboratory, Madison, N. J.
Kewanee-Ross Corp., Kewanee, Ill.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Lester Laboratories, Inc., Atlanta, Ga.
Lindy Heaters, Inc., Bronx, N. Y.
Magnus Chemical Co., Garwood, N. J.
McMillan Industrial Supplies, C. C., Portland, Ore.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Morheat Corp., Cincinnati, O.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Octagon Process, Inc., Staten Island, N. Y.
Parke-Hill Chemical Corp., Mt. Vernon, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Perolin Co., Inc., New York, N. Y.
Process Solvent Co., Kansas City, Kans.
Radiator Specialty Co., Charlotte, N. C.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Saverite Engineering Co., Hoboken, N. J.
Sci-eff-ec Labs., Chagrin Falls, O.
Sealed Unit Parts Co., Inc., New York, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Squires Co., C. E., The, Cleveland, O.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Conneaut, O.
Sudbury Laboratory, South Sudbury, Mass.
Sulflo, Inc., Elizabeth, N. J.
Tankit Co., The, Newark, N. J.
Turco Products, Inc., Wilmington, Calif.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York N. Y.
Warren Refining & Chemical Co., The, Cleveland, O.
Water Service Laboratories, Inc., New York, N. Y.
Water Treatment Corp. of America, Pittsburgh, Pa.
X Laboratories, Inc., New York, N. Y.

COMPOUNDS, BOILER AND RADIATOR SEALING

Ampion Corp., Long Island City, N. Y.
Arco Co., The, Cleveland, O.
Black & White Chemical Co., New York, N. Y.
Blue Seal Chemical Co., Roselle Park, N. J.
Cannon Chemical Co., Inc., Cambridge, Mass.
Eagle-Picher Co., Cincinnati, O.
Hampton-Cross Co., The, Louisville, Ky.
Heller Laboratories, Inc., Leonia, N. J.
Hercules Chemical Co., Inc., New York.
Johns-Manville Corp., New York, N. Y.
Kenite Laboratory, Madison, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Parke-Hill Chemical Corp., Mt. Vernon, N. Y.
Permatex Co., Inc., Long Island, N. Y.
Quigley Co., Inc., New York, N. Y.
Radiator Specialty Co., Charlotte, N. C.
Refractory & Insulation Corp., New York N. Y.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Sulflo, Inc., Elizabeth, N. J.
Whitlam Mfg..Co., J. C., Wadsworth, O.
X Laboratories, Inc., New York, N. Y.
X Pando Corp., Long Island City, N. Y.

COMPOUNDS, CAULKING AND SEALING

Acorn Refining Co., Cleveland, O.
Adams Chemical Corp., El Segundo, Calif.
Arco Co., The, Cleveland, O.
Babbitt Chemical Co., New Bedford, Mass.
Belmont Smelting & Refining Wks., Inc., Brooklyn, N. Y.
Calbar, Inc., Philadelphia, Pa.
Conley Plastics Corp., Ed, Tulsa, Okla.
Cordo Chemical Corp., Norwalk, Conn.
Corrosion Control Co., Inc., New York, N. Y.
Dixon Crucible Co., Joseph, Jersey City, N. J.
Dow Corning Corp., Midland, Mich.
Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Gates Engineering Co., Wilmington, Del.
Horn Companies, A.C., Subsid. of Sun Chemical Corp., New York, N. Y.
Insul-Coustic, Inc., Maspeth, L. I., N. Y.
Johns-Manville Corp., New York, N. Y.
Lastik Paint, Inc., Pittsburgh, Pa.
Midland Industrial Div., The Harrison Paint & Varnish Co., Canton, O.
Midwest Noise Control, Indianapolis, Ind.
Minnesota Mining & Mfg. Co., Adhesives, Coatings & Sealers Div., St. Paul, Minn.
Mortell Co., J. W., Kankakee, Ill.
Nebel Mfg. Co., Cleveland, O.
Pecora Inc., Philadelphia, Pa.
Permatex Co., Inc., Long Island, N. Y.
Plastic Products Co., Detroit, Mich.
Products Research Co., Burbank, Calif.
Smooth-On Mfg. Co., Jersey City, N. J.
Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.
Thiokol Chemical Corp., Trenton, N. J.
Whitlam Mfg. Co., J. C., Wadsworth, O.
Williamson Adhesives, Inc., Skokie, Ill.
X-Pando Corp., Long Island City, N. J.

COMPOUNDS, CLEANING, AIR FILTER

Airkem, Inc., New York, N. Y.
Dollinger Corp., Rochester, N. Y.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Lester Laboratories, Inc., Atlanta, Ga.
Magnus Chemical Co., Garwood, N. J.
Montgomery Chemical Co., Jenkintown, Pa.
National Aniline Div., Allied Chemical Corp., New York, N. Y.
Oakite Products, Inc., New York, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Perolin Co., Inc., The, New York, N. Y.
Peters Co., The, Div. of Toledo Paint & Chemical Co., Toledo, O.
Smith Chemical Co., E. W., La Puente, Calif.
Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.
Turco Products, Inc., Wilmington, Calif.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

COMPOUNDS, CLEANING, PIPE COIL AND CONDENSER

Acme Chemical Co., Milwaukee, Wis.
Airkem, Inc., New York, N. Y.
Amchem Products, Inc., Ambler, Pa.
American Sand-Banum Co., Inc., Merrick, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Bird-Archer Co., Philadelphia, Pa.
Blue Seal Chemical Co., Roselle Park, N. J.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Cannon Chemical Co., Inc., Cambridge, Mass.
Carolina Aniline & Extract Co., Inc., Charlotte, N. C.
Chemical Solvent Co., Birmingham, Ala.
Dearborn Chemical Co., Chicago, Ill.
Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
Garman Co., Inc., The, St. Louis, Mo. (also for pumps, condensers, etc.)
Gotham Refining Chemical Co., New York, N. Y.
Hercules Chemicals Co., Inc., New York, N. Y.
Homestead Valve Mfg. Co., Coraopolis, Pa.

Krylon, Inc., Norristown, Pa.
Lester Laboratories, Inc., Atlanta, Ga.
Magnus Chemical Co., Garwood, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Octagon Process, Inc., Staten Island, N. Y.
Parke-Hill Chemical Corp., Mt. Vernon, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Permatex Co., Inc., Long Island, N. Y.
Perolin Co., Inc., New York, N. Y.
Petroleum Solvents Corp., New York, N. Y.
Process Solvent Co., Kansas City, Kans.
Radiator Specialty Co., Charlotte, N. C.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Conneaut, O.
Turco Products, Inc., Wilmington, Calif.
Water Treatment Corp., of America, Pittsburgh, Pa.

COMPOUNDS, CLEANING, TANK

Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
Easton R. S. Corp., Brooklyn, N. Y.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jet-Lube, Inc., Burbank, Calif.
Lester Laboratories, Inc., Atlanta, Ga.
Magnus Chemical Co., Garwood, N. J.
National Aniline Div., Allied Chemicals Corp., New York, N. Y.
Neilson Chemical Co., Detroit (Ferndale), Mich.
Norcross Co., Sterling E., Bloomfield, N. J.
Oakite Products, Inc., New York, N. Y.
Parke-Hill Chemical Corp., Mt. Vernon, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Perolin Co., Inc., The, New York, N. Y.
Peters Co., The, Div. of Toledo Paint & Chemical Co., Toledo, O.
Radiator Specialty Co., Charlotte, N. C.
Smith Chemical Co., E. W., La Puente, Calif.
S.O.S. Products Co., Inc., Brooklyn, N. Y.
Sudbury Laboratory, South Sudbury, Mass.

COMPOUNDS, LEAK DETECTING

See Isotopes, Radioactive, for Detecting Leaks in Piping and Heating Systems

COMPOUNDS, WELDING

Allen Co., Inc., L. B., Schiller Park, Ill.
Allied Weld-Craft, Inc., Indianapolis, Ind.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Aluminum Co. of America, Pittsburgh, Pa.
American Solder & Flux Co., Philadelphia, Pa.
Atlas Welding Accessories Inc., Ferndale, Mich.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.
Metal & Thermit Corp., Rahway, N. J.
Midland Industrial Div., The Harrison Paint & Varnish Co., Canton, O.
Mir-O-Col Alloy Co., Inc., Los Angeles, Calif.
Modern Engineering Co., St. Louis, Mo.
Presstite Div., American-Marietta Co., St. Louis, Mo.
Rexarc, Inc., W. Alexandria, O.
Solar Aircraft Co., San Diego, Calif.
Special Chemicals Corp., Ossining, N. Y.
Stainless Processing Div., Wall Colmonoy Corp., Detroit, Mich.
Thompson and Co., Oakmont, Pa.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weldit, Inc., Detroit, Mich.
Wolfe-Kote Co., Inc., Sheboygan, Wis.

COMPRESSED AIR DEHUMIDIFIERS

See Dehumidifiers for Compressed Air

COMPRESSED AIR MOTORS

See Motors, Compressed Air Powered

COMPRESSION PIPE FITTINGS

See Fittings, Pipe, Compression

COMPRESSOR BASES

See Bases, Vibration Isolating Pad Type; Bases, Vibration Isolating, Spring Type

COMPRESSOR PARTS

See Parts, Air Compressors; Parts, Refrigerating Compressors

COMPRESSOR SEALS

See Seals, Terminal, for Compressors

COMPRESSORS, AIR

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Atlas Copco Eastern, Inc., Paramus, N. J.
Beach-Russ Co., New York, N. Y.
Binks Mfg. Co., Chicago, Ill.
Black Mfg. Co., Div. of Alexander Milburn, Inc., Baltimore, Md.
Bury Compressor Co., Erie, Pa.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Champion Pneumatic Machinery Co., Princeton, Ill.
Chicago Pneumatic Tool Co., New York, N. Y.
Clark-Cooper Co., C C Pump Div., Palmyra, N. J.
Cooper-Bessemer Corp., Mt. Vernon, O.
Curtis Mfg. Co., Refrigeration Div., St. Louis.
Davey Compressor Co., Kent, O.
Dayton Electric Mfg. Co., Chicago, Ill.
DeVilbiss Co., The, Toledo, O.
Essick Mfg. Co., Los Angeles, Calif.
Fuller Co., Catasauqua, Pa.
Gardner-Denver Co., Quincy, Ill.
Gray Co., Inc., Minneapolis, Minn.
Haskel Engineering & Supply Co., Glendale, Calif.
Ingersoll-Rand Co., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Joy Mfg. Co., Pittsburgh, Pa.
Kellogg-American Div., Scaife Co., Oakmont, Pa.
Lammert & Mann Co., Chicago, Ill.
Lapp Insulator Co., LeRoy, N. Y. (for hard to handle gases with leak-proof diaphragm)
LeRoi Div., Westinghouse Air Brake Co., Milwaukee, Wis.
M & F Mfg. Co., Indianapolis, Ind.
Nash Engineering Co., South Norwalk, Conn.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Powers Regulator Co., Skokie, Ill.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Schramm, Inc., West Chester, Pa.
Solar Aircraft Co., San Diego, Calif.
Superior Pneumatic & Mfg. Co., Inc., Cleveland, O.
Thomas Industries, Inc., Electric Sprayit Div., Sheboygan, Wis.
Thor Power Tool Co., Aurora, Ill.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Wayne Pump Co., Div. of Symington Wayne Corp., Ft. Wayne, Ind.
Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Wilson Co., K. R., Arcade, N. Y.
Winslow Mfg. Corp., Hialeah, Fla. (portable)
Worthington Corp., Harrison, N. J.
Yeomans Bros. Co., Melrose Park, Ill.
York Div., Borg-Warner Corp., York, Pa. (centrifugal)

COMPRESSORS, REFRIGERATING, CENTRIFUGAL

American-Standard Industrial Div., Detroit, Mich.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O. (open and hermetic)
Cooper-Bessemer Corp., The, Mt. Vernon, O.
Trane Co., The, LaCrosse, Wis.
Worthington Corp., Harrison, N. J. (open & hermetic)
York Div., Borg-Warner Corp., York, Pa.

COMPRESSORS, REFRIGERATING, COMBINED WITH CONDENSER, WATER CHILLER, PIPING CONNECTIONS, AND CONTROLS

Acme Industries, Inc., Jackson, Mich.
Aimco Products Corp., Subsid. of Yuba Consolidated Industries, Inc., Tulsa, Okla. (3-30 tons)
Bell & Gossett Co., Morton Grove, Ill.
Bendix-Westinghouse Automotive Air Brake Co., Evansville, Ind.
Brown Products Corp., Union, N. J.
Brunner Div. of Dunham-Bush, Inc., West Hartford, Conn.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O. (open and hermetic)
Circle Air Industries, Inc., Brooklyn, N. Y.
Cool-Ette, Inc., Detroit, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dialatemp, Inc., St. Louis, Mo.
Dunham-Bush, Inc., West Hartford, Conn.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Frick Co., Waynesboro, Pa.
General Machine & Mfg. Co., Berwick, Pa.
Governair Corp., Oklahoma City, Okla.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Hydromation Corp., Chicago, Ill.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Lehigh Mfg. Co., Div. of Lehigh, Inc., Easton, Pa.
Mayer Refrigerating Eng., Inc., Lincoln Park, N. J.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Ready-Power Co., Detroit, Mich. (unit driven by direct connected internal combustion engine)
Schnacke, Inc., Evansville, Ind.
Temprite Products Corp., Birmingham, Mich.
Trane Co., The, LaCrosse, Wis.
U.S. Air Conditioning Corp., Delaware, O. (5 to 150 tons)
Vilter Mfg. Co., The, Milwaukee, Wis.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J. (3 - 20 tons)
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Worthington Corp., Harrison, N. J.
York Div., Borg-Warner Corp., York, Pa.

COMPRESSORS, REFRIGERATING, RECIPROCATING

Bendix-Westinghouse Automotive Air Brake Co., Evansville, Ind. (hermetic)
Brunner Div. of Dunham-Bush, Inc., West Hartford, Conn. ("Freon" 12 & 22) (open & hermetic)
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y. (open & hermetic)
Chrysler Corp., Airtemp Div., Dayton, O. (open and hermetic)
Cooper-Bessemer Corp., The, Mt. Vernon, O. (open)
Copeland Refrigeration Corp., Sidney, O. (open & hermetic)
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo. (open)
Dersch, Gesswein & Neuert, Inc., Chicago, Ill. (open)
Dunham-Bush, Inc., West Hartford, Conn.
Frick Co., Waynesboro, Pa. (Ammonia, "Freon") (open)
General Machine & Mfg. Co., Berwick, Pa. (open & hermetic)
Howe Ice Machine Co., Chicago, Ill. (open)
Ingersoll-Rand Co., New York, N. Y. (open)
Kelvinator Div., American Motors Corp., Detroit, Mich. (hermetic)
Kramer Trenton Co., Trenton, N. J.
Lehigh Mfg. Co., Div. of Lehigh Inc., Easton, Pa. (open & hermetic)
Melchior, Armstrong, Dessau, Inc., Ridgefield, N. J.
Multiplex Mfg. Co., Berwick, Pa. (open)
Onan & Sons Inc., D. W., Minneapolis, Minn. (engine-driven)
Ready-Power Co., The, Detroit, Mich. (unit driven by direct-connected internal combustion engine)
Reliance Refrigerating Machine Co., Chicago, Ill. ("Freon," methyl chloride, ammonia) (open)
Schnacke, Inc., Evansville, Ind.
Stewart Ice Machine Co., Pomona, Calif. (open)
Tecumseh Products Co., Tecumseh, Mich. (open and hermetic)
Thermo King Corp., Minneapolis, Minn. (open)
Trane Co., The, LaCrosse, Wis. (hermetic)
Vilter Mfg. Co., Milwaukee, Wis. ("Freon" ammonia) (open)
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va. (hermetic)

Worthington Corp., Harrison, N. J. (open and hermetic)
York Div., Borg-Warner Corp., York, Pa. (Ammonia, freon) (open and hermetic)

COMPRESSORS, REFRIGERATING, STEAM JET

Croll-Reynolds Engrg. Co., Inc., Stamford, Conn.
Elliott Co., Jeannette, Pa.
Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Schutte and Koerting Co., Cornwells Heights, **Bucks County, Pa.**

COMPRESSORS, STEAM BOOSTER

Bury Compressor Co., Erie, Pa.
Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Joy Mfg. Co., Pittsburgh, Pa.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Worthington Corp., Harrison, N. J.

COMPUTERS, PIPE STRESS AND OTHER ANALYSES

Service Bureau Corp., The, New York, N. Y.

CONCRETE, INSULATING, FOR UNDERGROUND PIPING

Mearlcrete Div., Mearl Chemical Corp., Roselle Park, N. J.
Poe Co., C. W., The, Cleveland, O.

CONDENSATE DISPOSAL UNITS

See Pumps, Condensate, For Removing Condensation From Air Conditioning Units

CONDENSATE RETURN

See Pumps, Condensation Return; Systems, Condensate Return

CONDENSATION METERS

See Meters, Condensation

CONDENSATION PUMPS

See Pumps, Condensation

CONDENSER TUBES

See Tubes, Condenser

CONDENSERS, REFRIGERATING, AIR COOLED

Acme Industries, Inc., Jackson, Mich. (3-100 tons)
Aimco Products Corp., Subsid. of Yuba Consolidated Industries, Inc., Tulsa, Okla. (2-120 tons)
American Furnace Co., St. Louis, Mo. (to 10 tons)
American-Standard Air Conditioning Div., New York, N. Y. (2, 3, 4, & 5 hp size)
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O. (2, 3 & 5 ton)
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis. (3, 5, 7½, and 10 hp)
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla. (1 to 10 tons)
Blazer Corp., Passaic, N. J. (to 300 tons)
Bohn Aluminum & Brass Corp., Detroit, Mich. (2-60 tons)
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill. (2-60 tons)
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O. (5 to 30 tons)
Cobell Industries, Inc., Cleburne, Tex., (2 to 10 ton)
Concrete Thermal Casings, Seattle, Wash.
Cond-Air Div., Elliott Engineering Co., Lynwood, Calif.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Day & Night Mfg. Co., La Puente, Calif. (3, 4, 5, 7½ tons)
Deansteel Products Co., San Antonio, Tex. (3, 5, 7½ ton)
Domestic Mfg. Corp., Houston, Tex.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J. (2 to 1000 tons)
Fedders Corp., Buffalo, N. Y.
Friedrick Refrigerators, Inc., San Antonio, Tex. (5 to 10 hp)
Frigid Coil, Inc., El Monte, Calif.
General Air Conditioning Corp., Los Angeles, Calif. (2, 3 ton)
General Electric Co., Air Conditioning Dept., Tyler, Tex. (2-10 tons)
Goodfellow Co., Inc., E. D., Memphis, Tenn. (10 thru 50 tons)
Governair Corp., Oklahoma City, Okla.
Halstead & Mitchell, Pittsburgh, Pa. (3 to 100 tons)
Heat-Exchangers, Inc., Chicago, Ill. (up to 10 ton)
Henry Furnace Co., The, Medina, O. (2, 3, 4, 5 ton)
Kirsch Co., Refrigeration Div., Sturgis, Mich. (up to 1 hp)
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga. (3-25 tons)
Lennox Industries, Inc., Marshalltown, Ia. (2, 3, 5, 7½, 10, 17 and 25 tons)
Magic Aire Div., United Electric Co., Wichita Falls, Tex., (2, 3, 5, 7½ & 10 tons)
Marley Co., The, Kansas City, Mo. (15 to 100 tons)
Marlo Coil Co., St. Louis, Mo. (1 to 50 tons)
McCord Corp.. Detroit, Mich. (to 3 HP)
McMillan Comfortaire, Inc., Jacksonville, Fla.
McQuay, Inc., Minneapolis, Minn. (7 to 85 tons)
Mueller Climatrol Div. of Worthington Corp., Milwaukee, Wis.
Olsen Mfg. Co., C. A., Elyria, O. (2, 3, 4, 5 hp)
Payne Co., LaPuente, Calif. (2, 3, 4, 5, 7½ hp)
Peerless Corp., Indianapolis, Ind. (10 ton)
Peerless of America, Inc., Chicago, Ill.
Perfection Div., Hupp Corp., Cleveland, O. (2 thru 20 tons)
Recold Corp., Los Angeles, Calif. (5 thru 40 tons)
Refrigeration Appliances, Inc., Chicago, Ill. (1-60 tons)
Rempe Co., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y. (up to 7½ hp)
Roberts-Gordon Appliance Corp., Buffalo, N. Y. (2-7½ tons)
Rome-Turney Radiator Co., Rome, N. Y.
Round Oak Div., Peerless Corp., Dowagiac, Mich. (1½-5 HP)
Silvercraft, Inc., Louisville, Ky.
Superior Radiator Corp., Minneapolis, Minn. (½ thru 30 HP)
Temtrol, Inc., Okarche, Okla.
Tenney Engineering, Inc., Union, N. J.
Thermal Engineering Corp., Houston, Tex.
Thermo King Corp., Minneapolis, Minn.
Trane Co., The, La Crosse, Wis. (2 to 30 tons)
Tubenfin Coil Co., Houston, Tex. (remote; up to 60 tons)
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
U.S. Air Conditioning Corp., Delaware, O. (3, 5, 7½, 10, 15 and 20 hp)
United Electric Co., Wichita Falls, Tex.
Vilter Mfg. Co., The, Milwaukee, Wis.
Weatherbuster Corp., Camden, Ark. (5 to 15 tons)
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J. (2 to 5 tons)
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O. (2, 3 & 5 tons)
Witt Co., A. H., Los Angeles, Calif. (2-50 tons)
Worthington Corp., Harrison, N. J.
York Div., Borg-Warner Corp., York, Pa.

CONDENSERS, REFRIGERATING, EVAPORATIVE

Acme Industries, Inc., Jackson, Mich.
American Cooling Tower Co., Kansas City, Mo.
American-Standard Industrial Div., Detroit, Mich.
Baltimore Aircoil Co., Inc., Baltimore, Md.
Blazer Corp., Passaic, N. J. (to 300 tons)
Buffalo Forge Co., Buffalo, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y. ("Freon," ammonia)
Chrysler Corp., Airtemp Div., Dayton, O.
Cobell Industries, Inc., Cleburne, Tex. (2 to 10 tons)
Cond-Air Div., Elliott Engineering Co., Lynwood, Calif.
Curtis Mfg. Co., Refrigeration Div., St. Louis.
Dean Products, Inc., Brooklyn, N. Y.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Forseille Products, Inc., Baltimore, Md.
Frick Co., Waynesboro, Pa.
Frigid Coil, Inc., El Monte, Calif.
Governair Corp., Oklahoma City, Okla.
Imeco, Inc., Chicago, Ill.
Kennard Products, **American Air Filter** Co., Inc., Louisville, Ky.
Larkin Coils, Inc., Atlanta, Ga.
Marley Co., The, Kansas City, Mo. (10 to 75 tons)
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Recold Corp., **Los Angeles, Calif.** (2 thru 230 tons)
Refrigeration Appliances, Inc., Chicago, Ill.
Temtrol, Inc., Okarche, Okla.
Trane Co., The, LaCrosse, Wis.
Vilter Mfg. Co., Milwaukee, Wis.
Wall Tube and Metal Products Co., Newport, Tenn.
Watkins Co., J. E., **Maywood, Ill.**
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Worthington Corp., Harrison, N. J.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.

CONDENSERS, REFRIGERATING, SHELL AND COIL

Acme Industries, Inc., Jackson, Mich.
Bell & Gossett Co., Morton Grove, Ill.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O.
Condenser **Service & Engineering Co., Inc., Hoboken, N. J.**
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
General Fittings Co., East Greenwich, R. I.
Halstead & Mitchell, Pittsburgh, Pa. (Double tube)
Heat-X Inc., Brewster, N. Y.
Heatron, Inc., York, Pa.
Heil Process Equipment Corp., Cleveland, O.
Howe Ice Machine Co., Chicago, Ill. (Freon ammonia methyl chloride)
Lehigh Mfg. Co., Div. of Lehigh Inc., Easton, Pa.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Nooter Corp., **St. Louis, Mo.**
Reco Products Div., Recony Corp., New York, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Standard Refrigeration Co., Chicago, Ill.
Trane Co., The, LaCrosse, Wis.
Tube Manifold Corp., North Tonawanda, N. Y.
Vilter Mfg. Co., Milwaukee, Wis.
Water Tube Boiler & Tank Co., Chicago, Ill.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J. (3 to 10 tons)
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whitlock Mfg. Corp., W. Hartford, Conn.
Worthington Corp., Harrison, N. J.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

CONDENSERS, REFRIGERATING, SHELL AND TUBE

Acme Industries, Inc., Jackson, Mich.
Adsco Div., Yuba Consolidated Industries Inc., Honesdale, Pa.
American-Standard Industrial Div., Detroi Mich.

Armstrong Co., Richard M., West Chester, Pa.
Bell & Gossett Co., Morton Grove, Ill.
Biggs Boiler Works Co., E. Akron, O.
Buxton Mfg. Co., Dover, N. J.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Cooley Co., E. C., San Francisco, Calif.
Curtis Mfg. Co., Refrigeration Div., St. Louis.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dersch, Gesswein & Neuert, Inc., Chicago.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
Frick Co., Waynesboro, Pa.
Hankison Corp., Canonsburg, Pa.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Howe Ice Machine Co., Chicago, Ill.
Manning & Lewis Engineering Co., Union, N. J.
McMillan Comfortaire, Inc., Jacksonville, Fla.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Nooter Corp., St. Louis, Mo.
Ohio Pipe Bending & Machine Co., Cleveland, O.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Ready-Power Co., The, Detroit, Mich.
Reco Products Div., Recony Corp., New York.
Reliance Refrigerating Machine Co., Chicago, Ill.
Schnacke, Inc., Evansville, Ind.
Standard Refrigeration Co., Chicago, Ill.
Stewart Ice Machine Co., Pomona, Calif.
Trane Co., The, LaCrosse, Wis.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Water Tube Boiler & Tank Co., Chicago, Ill.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whitlock Mfg. Co., W. Hartford, Conn.
Worthington Corp., Harrison, N. J.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.
Yuba Div., Yuba Consolidated Industries, Inc., Benicia, Calif.
Yula Corp., Bronx, N. Y.

CONDENSERS, WATER DISTRIBUTORS FOR

See Distributors, Water, for Condensers

CONDENSING UNITS

See Compressors

CONDITIONERS, WATER

American Water Softener Co., Philadelphia, Pa.
American Wells Works, Aurora, Ill.
Bruner Corp., Milwaukee, Wis.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Cochrane Corp., Philadelphia, Pa.
Elgin Softener Corp., Elgin, Ill.
Infilco, Inc., Tucson, Ariz.
Kargard Co., The, Marinette, Wis.
Magnus Chemical Co., Garwood, N. J.
Marginator Co., Burbank, Calif.
Myers & Bro. Co., The F. E., Ashland, O.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Sparkler-Filtrion Corp., North Chicago, Ill.
Stiles Karlsonite Corp., Waukegan, Ill.
Water Service Laboratories, Inc., New York, N. Y.

CONDUIT, UNDERGROUND PIPING

Byers Co., A. M., Pittsburgh, Pa. (Wrought iron)
Concrete Thermal Casings, Seattle, Wash.
Durant Insulated Pipe Co., E. Palo Alto, Calif.
Durant Insulated Pipe Co., Inc., Cleveland, O.
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC)
Heat Transmission Conduit Co., Cleveland, O.
Johns-Manville Corp., New York, N. Y. (asbestos-cement)
Kaiser Co., E. B., Glenview, Ill.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Mearlcrete Div., Mearl Chemical Corp., Roselle Park, N. J.
Midwesco, Inc., Chicago, Ill.
Porter & Co., Inc., H. W., Newark, N. J.
Ric-wiL, Inc., Barberton, O.
Tubular Div., The National Supply Co., Pittsburgh, Pa.
U-Con Co., Annapolis, Md.

CONNECTIONS, DUCT, FLEXIBLE (ASBESTOS, CANVAS, ETC.)

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Alasko Rubber & Plastic Corp., San Bruno, Calif. (rubber and plastic)
Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.
Cain Mfg. Inc., Birmingham, Ala.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Elgen Mfg. Corp., Long Island City, N. Y.
Flexaust Co., New York, N. Y.
Flexible Tubing Corp., Guilford, Conn.
Grant Wilson, Inc., Chicago, Ill.
Johns-Manville Corp., New York, N. Y.
Keldur Div. of Quimby & Co., Chester, N. J.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rubber)
Nicolet Industries, Inc., Florham Park, N. J.
St. Clair Rubber Co., Detroit, Mich.
United States Rubber Co., New York, N. Y.
Ventfabrics Inc., Chicago, Ill.
Wagner Awning & Mfg. Co., Cleveland, O.

CONNECTORS, FILLING, HYDROSTATIC TEST

Airaterra (Roylyn Products), Glendale, Calif.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Gasoilair Equipment, New Haven, Conn.
Mechanical Products Corp., Chicago, Ill.
Scully Signal Co., Melrose, Mass.
Wiggins Oil Tool Co., Inc., E. B., Los Angeles, Calif.

CONNECTORS, FOR NON-METALLIC DUCT FABRICATION

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Acme Steel Co., Chicago, Ill. (Strapping)
Alasko Rubber & Plastic Corp., San Bruno, Calif.
Cain Mfg. Inc., Birmingham, Ala.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (unplasticized polyvinyl chloride)
Lumm Co., A. H., Toledo, O.
New York Bellows Co., New York, N. Y.
United States Rubber Co., New York, N. Y.

CONTINUOUS HEATERS

See Heaters, Steam Jet, for Liquids

CONTROL, SAFETY, GAS FLOW

Dewey Gas Furnace Co., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
General Controls Co., Glendale, Calif.
Hastings-Raydist, Inc., Hampton, Va.
White-Rodgers Co., St. Louis, Mo.

CONTROL SYSTEMS, PRE-ASSEMBLED AS UNITS, FOR HEATING, COOLING AND VENTILATING

Factory Assemblies Using Other Manufacturers' Valves, Thermostats, Damper Motors, etc.

American Moistening Co., Cleveland, N. C.
Arens Controls, The, Evanston, Ill.
Automatic Control Co., St. Paul, Minn.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Bahnson Co., Winston-Salem, N. C.
Barber-Colman Co., Rockford, Ill.
Best Combustion Equipment Co., Inc., W. N., Little Ferry, N. J.
Better Engineered Controls, Los Angeles, Calif.
Bristol Co., The, Waterbury, Conn.
Brooks Instrument Co., Inc., Hatfield, Pa.
Carvell Heat Equipment Co., Los Angeles, Calif.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Cleveland Controls, Inc., Cleveland, O.
Curtis Development & Mfg. Co., Milwaukee, Wis.
Cutler-Hammer, Inc., Milwaukee, Wis.
Devco Engineering, Inc., Control Systems Div., Caldwell, N. J.
Dunham-Bush, Inc., West Hartford, Conn.
Electronics Corp. of America, Cambridge, Mass.
Fischer & Porter Co., Warminster, Pa.
General Controls Co., Glendale, Calif.
Heat-Timer Corp., New York, N. Y.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
International Business Machines Corp., New York, N. Y.
Kingston National Controls Div., Kingston Industries, Inc., Medfield, Mass.
Lennox Industries Inc., Des Moines, Ia.
Master Control Co., The, Cuyahoga Falls, O.
Maxitrol Co., Southfield, Mich.
Midwest Air Conditioning Co., Des Moines, Ia.
Protection Controls, Inc., Skokie, Ill.
Ray Oil Burner Co., San Francisco, Calif.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
West Instrument Corp., Chicago, Ill.
White-Rodgers Co., St. Louis, Mo.

CONTROL SYSTEM TUBING

See Tubing, Control, for Instrumentation

CONTROLLERS AND STARTERS, MOTOR

ACEC Electric Corp., New York, N. Y.
Airgard Mfg. Co., Chicago, Ill.
Allen-Bradley Co., Milwaukee, Wis.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Arrow-Hart & Hegeman Elec. Co., Hartford, Conn.
Automatic Control Co., St. Paul, Minn.
Better Engineered Controls, Los Angeles, Calif.
Clark Controller Co., Cleveland, O.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Curtis Development & Mfg. Co., Milwaukee, Wis.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
Ebert Electronics Corp., Queens Village, N. Y.
Electric Controller & Mfg. Co., Div. of Square D Co., Cleveland, O.
Electric Machinery Mfg. Co., Minneapolis, Minn.
Electric Products Co., Cleveland, O.
Franklin Dales Co., Akron, O.
Furnas Electric Co., Batavia, Ill.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
General Electric Co., Distribution Unit, Plainville, Conn.
Guardian Electric Mfg. Co., Chicago, Ill.
Ideal Electric & Mfg. Co., Mansfield, O.
International Business Machine Corp., New York, N. Y.
Mechanical Products, Inc., Jackson, Mich.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Monitor Controller, Rockland, Mass.
Nelson Electric Mfg. Co., Tulsa, Okla.
Potter & Brumfield, Princeton, Ind.
Reynolds Electric Co., River Grove, Ill.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Teleflex Industrial Products, Inc., Boyertown, Pa.
United Electric Controls Co., Watertown, Mass.
Ward Leonard Electric Co., Mt. Vernon, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.
Zenith Electric Co., Chicago, Ill.

CONTROLS, AIR CONDITIONING

See Humidistats; Indicator-Controllers; Operators, Damper; Operators, Valve; Recorder-Controllers; Regulators; Relays; Switches; Thermostats; Valves, Diaphragm; Valves, Refrigeration; Valves, Solenoid

CONTROLS, DOOR, ELECTRIC EYE (FOR AIR CONDITIONED ROOMS)

Barber-Colman Co., Rockford, Ill.
Clark Controller Co., Cleveland, O.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
De-Tec-Tronic Corp., Chicago, Ill.
Electronics Corp. of America, Cambridge, Mass.
Hanna Engineering Works, Chicago, Ill.
Knapp Bros Mfg. Co., Cincinnati, O.
Photobell Co., Inc., New York, N. Y.
Stanley Electric Tools Div., The Stanley Works, New Britain, Conn. (automatic)
Westinghouse Electric Corp., Pittsburgh, Pa.
Worner Electronics Devices, Rankin, Ill.

CONTROLS, DRAFT, BAROMETRIC

Boston Machine Works Co., Lynn, Mass.
Bristol Co., The, Waterbury, Conn.
Canton Stoker Corp., Canton, O.
Coen Controls Co., Inc., San Francisco, Calif.
Cole-Sewell Engineering Co., St. Paul, Minn.
Combustion Equipment Co., Moline, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Field Control Div., Conco Engineering Works, Inc., Mendota, Ill.
Fuelguard Co., Dallas, Tex.
General Blower Co., Philadelphia, Pa.
General Controls Co., Glendale, Calif.
Hotstream Heater Co., Cleveland, O.
Industrial Sheet Metal Work, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Photomation, Inc., Bergenfield, N. J.
Preferred Utilities Mfg. Corp., New York.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Salina Metal Products Co., Salina, Kan.
Simplex Mfg. Co., Fond du Lac, Wis.
Steinen Mfg. Co., Wm., Newark, N. J.
Walker Mfg. & Sales Co., St. Joseph, Mo.
Windmaster Div. of Lima Register Co., Lima, O.

CONTROLS, FAN

American-Standard Controls Div., Detroit, Mich.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Barber-Colman, Inc., Rockford, Ill.
Cam Stat, Inc., Div. of the Paul Henry Co., Los Angeles, Calif.
Cleveland Controls, Inc., Cleveland, O.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Curtis Development & Mfg. Co., Milwaukee, Wis.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
Hart Mfg. Co., The, Hartford, Conn.
McLarty Systems, Battle Creek, Mich.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Optimum Control Corp., Cleveland, O.
Penn Control, Inc., Goshen, Ind.
Signet Controls, Portland, Ore.
Therm-O-Disc, Inc., Mansfield, O.
White-Rodgers Co., St. Louis, Mo.
Worner Electronic Devices, Rankin, Ill.

CONTROLS, FIRE PROTECTION SPRINKLER SYSTEMS

Allen Mfg. Co., W. D., Bellwood, Ill.
American District Telegraph Co., New York, N. Y.
Automatic Control Co., St. Paul, Minn.
Clark Controller Co., Cleveland, O.
Cutler-Hammer, Inc., Milwaukee, Wis.
Fenwal Inc., Ashland, Mass.
Fyr-Fyter Co., Dayton, O.
General Controls Co., Glendale, Calif.
Grinnell Co., Inc., Providence, R. I.
McDonnell & Miller, Inc., Chicago, Ill.
Raisler Corp., Grimes Sprinkler Div., New York, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.
Sperti Faraday, Inc., Adrian, Mich.
Synchro-Start Products, Inc., Skokie, Ill.
United Electric Controls Co., Watertown, Mass.

CONTROLS, FLAME FAILURE

American District Telegraph Co., New York, N. Y.
Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Baso, Inc., Milwaukee, Wis.
Bristol Co., The, Waterbury, Conn.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
De-Tec-Tronic Corp., Chicago, Ill.
Drying Systems Co., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electronics Corp. of America, Cambridge, Mass.
Forney Engineering Co., Dallas, Tex.
Fuelguard Co., Dallas, Tex.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
Haney Burner Div., Southwest Gas Corp., Las Vegas, Nev.
Instruments, Inc., Tulsa, Okla.
Mercoid Corp., The, Chicago, Ill
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Midwesco, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Penn Controls, Inc., Goshen, Ind.
Photobell Co., Inc., New York, N. Y.
Photomation, Inc., Bergenfield, N. J.
Protection Controls, Inc., Skokie, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Stout & Sons, David, St. Louis, Mo.
Teleflex Industrial Products, Inc., Boyertown, Pa.
Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.
White-Rodgers Co., St. Louis, Mo.

CONTROLS, HEATING

See Alarms; Humidistats; Indicator-Controllers; Operators, Damper; Operators, Valve; Recorder-Controllers; Regulators; Relays; Switches; Systems, Combustion Control; Systems, Heating; Thermostats; Valves, Balancing, for Forced Hot Water Heating Systems; Valves, Diaphragm; Valves, Flow Control; Valves, Mixing; Valves, Pressure Reducing and Regulating; Valves, Radiator; Valves, Solenoid

CONTROLS, PUSH-PULL

See Shafts, Flexible, for Control

CONTROLS, REFRIGERATION

See Humidistats; Operators, Valve; Relays; Switches; Thermostats; Valves, Refrigeration; Valves, Solenoid

CONTROLS, FOR STARTING AND STOPPING PUMPS

Allen Bradley Co., Milwaukee, Wis.
Automatic Controls Co., St. Paul, Minn.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Clark Controller Co., Cleveland, O.
Flow Actuated Control Co., Inc., New York, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
Healy-Ruff Co., St. Paul, Minn.
Penn Controls, Inc., Goshen, Ind.
United Electric Controls Co., Watertown, Mass.

CONVECTORS

See Radiation, Convection Type

CONVERTORS, STEAM

Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Alstrom Corp., New York, N. Y.
Bell & Gossett Co., Morton Grove, Ill.
Beltran Associates, Inc., Brooklyn, N. Y.
Bernstrom, Inc., C. R., Providence, R. I.
Birchfield Boiler, Inc., Tacoma, Wash.
Buxton Mfg. Co., Dover, N. J.
Cooley Co., E. C., San Francisco, Calif.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dunham-Bush, Inc., West Hartford, Conn.
Ellicott Fabricators, Inc., Baltimore, Md.
General Fittings Co., East Greenwich, R. I.
Lindy Heaters, Inc., Bronx, N. Y.
Manning & Lewis Engineering Co., Union, N. J.
Mauney, Rowe A., Marion, N. C.
Old Dominion Iron & Steel Corp., Richmond, Va.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Richmond Engineering Co., Richmond, Va.
Taco Heaters, Inc., Cranston, R. I.
Water Tube Boiler & Tank Co., Chicago, Ill.
Yula Corp., Bronx, N. Y.

CONVEYORS, COAL AND ASH

Ajax Flexible Coupling Co., Inc., Westfield, N. Y.
Allen-Sherman-Hoff Co., Wynnewood, Pa.
American Coal Burner and Wood Stoker Corp., Chicago, Ill.
Auburn Foundry Inc., Heating Div., Auburn, Ind.
B-I-F Industries, Builders-Providence Div., Providence, R. I. (Continuous, weighing)
Bil-Jax, Inc., Archbold, O.
Canton Stoker Corp., Canton, O.
Chain Belt Co., Milwaukee, Wis.
Cleveland Crane & Eng. Co., Wickliffe, O.
Dayton Automatic Stoker Co., Dayton, O.
Electric Furnace-Man, Inc., Emmaus, Pa. (mechanical and pneumatic)
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Hager & Son, Inc., Rockford, Ill.
Hewitt-Robins, Inc., Stamford, Conn.
Jeffrey Mfg. Co., Columbus, O.
Johnston & Jennings Co., Cleveland, O.
Joy Mfg. Co., Pittsburgh, Pa.
Kol-Master Corp., Oregon, Ill.
Link-Belt Co., Chicago, Ill.
New London Engineering Co., New London, Wis.
Spurgeon Co., Warren, Mich.
Stephens-Adamson Mfg. Co., Aurora, Ill.
United States Rubber Co., New York, N. Y. (belts)
Whitty Co., Inc., Boston, Mass.
Will-Burt Co., The, Orrville, O.

COOLERS, CRANE CAB

Anderson-Snow Corp., Chicago, Ill.
Ellis & Watts Products, Inc., Cincinnati, O.
Lintern Corp., Painesville, O.
Trane Co., The, LaCrosse, Wis.

COOLERS, EVAPORATIVE

See Unitary Air Conditioners, Summer, Evaporative Cooling Type

COOLERS, OIL

Acme Industries, Inc., Jackson, Mich.
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Alco Products, Inc., Schenectady, N. Y.
American Cooling Tower Co., Kansas City, Mo.
American-Standard Industrial Div., Detroit.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Andale Co., Philadelphia, Pa.
Armstrong Co., Richard M., West Chester, Pa.
Baltimore Aircoil Co., Inc., Baltimore, Md.
Brown Fintube Co., Elyria, O.
Buxton Mfg. Co., Dover, N. J.
Chrysler Corp., Airtemp Div., Dayton, O.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Cooley Co., E. C., San Francisco, Calif.
Croll-Reynolds Engineering Co., Inc., Stamford, Conn.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dean Products, Inc., Brooklyn, N. Y.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Doyle & Roth Mfg. Co., Inc., Brooklyn.
Ellis & Watts Products, Inc., Cincinnati O. (solvent)

Fedders Corp., Buffalo, N.Y.
Fluor Products Co., Santa Rosa, Calif.
G & O Mfg. Co., New Haven, Conn.
Gilbert Brass Foundry Co., St. Louis, Mo.
Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Griffin & Co., Louisville, Ky.
Griscom-Russell Co., The, Massillon, O.
Heat-Exchangers, Inc., Chicago, Ill.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Heatron, Inc., York, Pa.
Imeco, Inc., Chicago, Ill.
Industrial Products Div., Perfex Corp., Milwaukee, Wis.
Manning & Lewis Engineering Co., Union, N. J.
Marlo Coil Co., St. Louis, Mo.
Modine Mfg. Co., Racine, Wis.
National Pipe Bending Co., New Haven, Conn.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Rome-Turney Radiator Co., Rome, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sims Co., Erie, Pa.
Standard-Thompson Corp., Waltham, Mass.
Struthers Wells Corp., Warren, Pa.
Super Radiator Corp., Minneapolis, Minn.
Taco Heaters, Inc., Cranston, R. I.
Temprite Products Corp., Birmingham, Mich.
Trane Co., The, LaCrosse, Wis.
Tranter Mfg., Inc., Lansing, Mich.
Vogt Machine Co., Henry, Louisville, Ky.
Whitlock Mfg. Co., W. Hartford, Conn.
Yates-American Machine Co., Heat Transfer Products Div., Beloit, Wis.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.
Yula Corp., Bronx, N. Y.

COOLERS, UNIT (FLOOR TYPE)

Not air conditioning units, but floor mounted unit with coil and centrifugal fans without filters, for connection to remote compressor or cold water supply. For air conditioning units see Unitary Air Conditioners

Auburn Burner Co., Auburn, Ind.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dean Products, Inc., Brooklyn, N. Y.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
Frick Co., Waynesboro, Pa.
Frigid Coil, Inc., El Monte, Calif.
Governair Corp., Oklahoma City, Okla.
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
King Co. of Owatonna, The, Owatonna, Minn.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Niagara Blower Co., New York, N. Y.
Reco Products Div., Recony Corp., New York, N. Y.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Rigidbilt Inc., Franklin Park, Ill.
Rinehart Inc., Richmond, Ind.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.

COOLERS, UNIT (SUSPENDED TYPE)

Not air conditioning units, but suspended unit with coil and propeller fan, without filters, for connection to remote compressor or cold water supply. For air conditioning units, see Unitary Air Conditioners

American Cooling Tower Co., Kansas City, Mo.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O.
Curtis Mfg. Co., Refrigeration Div., St. Louis.
Dean Products, Inc., Brooklyn, N. Y.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Frigid Coil, Inc., El Monte, Calif.
Governair Corp., Oklahoma City, Okla.
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
King Co. of Owatonna, The, Owatonna, Minn.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Marlo Coil Co., St. Louis, Mo.
Master-Bilt Refrigeration Mfg. Co., St. Louis.
McQuay, Inc., Minneapolis, Minn.
Niagara Blower Co., New York, N. Y.
Peerless of America, Inc., Chicago, Ill.
Reco Products Div., Recony Corp., New York.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Franklin Park, Ill.
Rinehart Inc., Richmond, Ind.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Tenney Engineering, Inc., Union, N. J.
Wilson Engineering Corp., Chicago, Ill.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.

COOLING COILS

See Surface Finned Cooling

COOLING COILS, FINNED

See Surface, Finned, Cooling

COOLING SURFACE

See Surface Finned Cooling

COOLING TOWERS

See Towers, Cooling

COOLING UNITS

See Unitary Air Conditioners; Coolers, Unit

COPPER PIPE

See Pipe, Brass and Copper

COPPER SHEETS

See Sheets, Copper

COPPER TUBE FITTINGS

See Fittings, Copper Tube

COPPER TUBE FITTINGS, FLARED

See Fittings, Copper Tube, Flared

COPPER TUBING

See Tubing, Brass and Copper

CORROSION PREVENTIVES

See Devices, Electrolytic, for Preventing Corrosion; Treatment, Steam System, to Inhibit Corrosion; and Treatment, Water, to Inhibit Corrosion

COUNTERS, DUST

Bausch & Lomb Optical Co., Rochester, N. Y.
Day Co., The, Minneapolis, Minn.
Gelman Instrument Co., Chelsea, Mich.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Mine Safety Appliances Co., Pittsburgh, Pa.
Willson Products Div., Reading, Pa.

COUPLINGS, FLEXIBLE, POWER TRANSMISSION

Ajax Flexible Coupling Co., Inc., Westfield, N. Y.
Blood Brothers Machine Div., Rockwell Spring and Axle Co., Allegan, Mich. (Universal joints)
Boston Gear Wks., Quincy, Mass.
Brooks Equipment Corp., Hoboken, N. J.
Browning Mfg. Co., Maysville, Ky.
Central Die Casting & Mfg. Co., Inc., Chicago, Ill.
Certified Flexible Couplings, Inc., Mt. Vernon, N. Y.
Chain Belt Co., Milwaukee, Wis.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Clark Flexible Link Shaft Co., Newton Highlands, Mass.
Climax Metal Products Co., Cleveland, O.
Congress Drives Div., Tann Corp., Detroit, Mich.
De Lavel Steam Turbine Co., Trenton, N. J.
Dodge Mfg. Corp., Mishawaka, Ind.
Elliott Co., Jeannette, Pa.
Falk Corp., Milwaukee, Wis.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Guardian Products Corp., Michigan City, Ind.
Hewitt-Robins, Inc., Stamford, Conn.
Jeffrey Mfg. Co., Columbus, O.
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill.
Koppers Company, Inc., Metal Products Div., Baltimore, Md.
Link Belt Co., Chicago, Ill.
Lord Mfg. Co., Erie, Pa.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Mercury Clutch Div., Automatic Steel Products, Inc., Canton, O. (automatic centrifugal clutch)
Morse Chain Co., Ithaca, N. Y.
Philadelphia Gear Corp., King of Prussia, Pa.
Piezo Mfg. Corp., Staten Island, N. Y.
Poole Foundry & Machine Co., Baltimore, Md.
Ramsey Products Corp., Albany, N. Y.
Royersford Foundry & Machine Co., Inc., Royersford, Pa.
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Standard-Thompson Corp., Waltham, Mass.
Thomas Flexible Coupling Co., Warren, Pa.
Twin Disc Clutch Co., Rockford, Ill.
Waldron Couplings, Waldron-Hartig Div., Midland-Ross Corp., New Brunswick, N. J.
Whitney Chain Co., Hartford, Conn.
Wood's Sons Co., T. B., Chambersburg, Pa.
Zurn Industries, Inc., Erie, Pa.

COUPLINGS, PIPE

Acheson Mfg. Co., Rankin, Pa.
Adams Pipe Repair Products, So. El Monte, Calif.
Aeroquip Corp., Jackson, Mich.
Aeroquip, Inc., Van Wert, O.
Afco Fitting Co., Div. of Curtis Mfg. Co. Cleveland, O.
Airaterra (Roylyn Products), Glendale, Cali
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo. (brass)
Baker & Co., R. H., Los Angeles, Calif.
Band-It Co., Denver, Colo.
Byers Co., A. M., Pittsburgh, Pa. (Wrought iron)
Camco Fittings Inc., North Haven, Conn. (stainless)
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Chase Brass & Copper Co., Waterbury, Conn.
Clayton Mark & Co., Evanston, Ill.
Clow & Sons, Inc., James B., Chicago, Ill.
Cooper-Alloy Corp., Hillside, N. J. (stainless)
Dahl Co., Inc., G. W., Bristol, R. I.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Esco Corp., Portland, Ore.
Fibercast Co., Sand Spring, Okla.
Fischer & Porter Co., Warminster, Pa. (glass to glass; glass to metal)
Flagg & Co., Inc., Stanley G., Philadelphia.
Flodar Corp., Cleveland, O.
Frick Co., Waynesboro, Pa.
Garlock, Inc., The, Palmyra, N. Y.
Gilbert Brass Foundry Co., St. Louis, Mo.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC)
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Gustin-Bacon Mfg. Co., Kansas City, Mo.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Henry Valve Co., Melrose Park, Ill.
Hydro-Flex Corp., Topeka, Kans.
Illinois Malleable Iron Co., Chicago, Ill.
Johns-Manville Corp., New York, N. Y. (asbestos - cement)
King Union Co., Inc., Hillsgrove, R. I.
Ladish Co., Cudahy, Wis.
Lenz Co., Dayton, O.
Malleable Iron Fittings Co., Branford, Conn.
Morris Coupling & Clamp Co., Kittanning, Pa.
Mueller Brass Co., Port Huron, Mich.
Mulconroy Co., Philadelphia, Pa.
New York Brass Foundry, New York, N. Y. (brass)

OPW - Jordan Corp., Cincinnati, O.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Phoenix Steel Corp., Phoenix Steel Tube Div., Phoenixville, Pa.
Pipeline Coatings & Engineering Co., Los Angeles, Calif.
Pipe Line Development Co., Cleveland, O.
Pipe Plugs, Inc., Wellington, O.
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J. (forged steel, stainless steel, and aluminum)
Rhode Island Fittings Co., Providence, R. I. (malleable)
Smith-Blair, Inc., S. San Francisco, Calif.
Southern Pipe Div. of U. S. Industries, Inc., Azusa, Calif.
Spanco Brass Sales, Allegan, Mich.
Speedline Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Star Stainless Screw Co., Paterson, N. J.
Star Tubular Products Co., Chicago, Ill.
Steel Improvement & Forge Co., The, Cleveland, O.
Stockham Valve & Fittings, Birmingham, Ala.
Stokes Molded Products, Div. of The Electric Storage Battery Co., Trenton, N. J. (unplasticized polyvinyl chloride)
Swepco Tube Corp., Clifton, N. J.
Tube Turns Div. of Chemetron Corp., Louisville, Ky. (welding couplings)
Tube Turns Plastics, Inc., Louisville, Ky. (UPVC)
Tubular Div., The National Supply Co., Pittsburgh, Pa.
U. S. Plug & Fitting Co., Wellington, O.
Union Malleable Mfg. Co., Ashland, O.
Union Metal Works Co., Inc., Chelsea, Mass.
United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J.
United States Stoneware Co., New York, N. Y.
Victaulic Co. of America, Elizabeth, N. J.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y. (steel, plastic and stainless)
Ward Foundries, Inc., J. P., Blossburg, Pa.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Wheatland Tube Co., Philadelphia, Pa. (steel)
Wheeling Machine Products Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

COUPLINGS, PIPE, DETACHABLE

Aero-Coupling Corp., Burbank, Calif.
Aeroquip Corp., Jackson, Mich.
Aeroquip, Inc., Van Wert, O.
Airaterra (Roylyn Products), Glendale, Calif.
Airserco Mfg. Co., Pittsburgh, Pa.
Allegheny Valve Co., Warren, Pa.
Alloy Stainless Products Co., Totowa, N. J.
American Flow Control Corp., Houston, Tex.
Anchor Coupling Co., Inc., Libertyville, Ill. (hose)
Baker & Co., R. H., Los Angeles, Calif.
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC)
Hunt Valve Co., Div. of IBEC, Salem, O.
Johnson Metal Hose, Inc., Waterbury, Conn.
Joslyn Mfg. & Supply Co., Chicago, Ill.
Morris Coupling & Clamp Co., Kittanning, Pa.
OPW-Jordan Corp., Cincinnati, O.
Smith Bros. Co., Oak Park, Ill.
Snap-Tite, Inc., Union City, Pa.
Swepco Tube Corp., Clifton, N. J.
Victaulic Co. of America, Elizabeth, N. J.
Wiggins Oil Tool Co., Inc., E. B., Los Angeles, Calif.
Zalo Mfg. Co., Cleveland, O.

COUPLINGS, QUICK CONNECT, DISCONNECT

Aeroquip Corp., Jackson, Mich.
Aeroquip, Inc., Van Wert, O.
Hofmann Engineering Co., Chicago, Ill.
Perfecting Service Co., Charlotte, N. C.
Snap-Tite, Inc., Union City, Pa.
Stokes Molded Products, Div. of Electric Storage Battery Co., Trenton, N. J. (PVC)
Superior Pneumatic & Mfg. Co., Inc., Cleveland, O.
Thor Power Tool Co., Aurora, Ill.
Titeflex, Inc., Springfield, Mass.
Uniflex Mfg. & Eng., Inc., Los Angeles, Calif.

COUPLINGS, TUBING, REFRIGERANT, RUPTURE, FOR INSTALLING FACTORY CHARGED REFRIGERATION EQUIPMENT

Aeroquip Corp., Jackson, Mich.
Aeroquip, Inc., Van Wert, O.
Anchor Coupling Co. Inc., Libertyville, Ill.
Superior Valve and Fittings Co., Pittsburgh, Pa.

COVERS, PROTECTIVE, VALVE AND FLANGE

Clover Industries, Inc., Tonawanda, N. Y.
Neirad Industries, Inc., Saugatuck, Conn.

COVERS, PROTECTIVE, FOR WINDOW AIR CONDITIONERS

Bemis Bro. Bag Co., St. Louis, Mo.
Blossom Mfg. Co., Inc., Brooklyn, N. Y.
Budlew Products Co., Chicago, Ill.
Canvas Products Co., St. Louis, Mo.
International Covers for Air Conditioners Corp., New York, N. Y.
Tulsa Canvas Products Co., Inc., Tulsa, Okla.
Wagner Awnings & Mfg. Co., Cleveland, O.
Wickford Products, Inc., Bronx, N. Y.
Wilmington Plastics Co., Wilmington, Del.

CRANE CAB COOLERS

See Coolers, Crane Cab

CROP DRYERS

See Dryers, Crop

CUT-OFFS, LOW WATER, HEATING BOILER

Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
General Controls Co., Glendale, Calif. and Skokie, Ill.
Instruments, Inc., Tulsa, Okla.
Johnson Corp., The, Three Rivers, Mich.
Magnetrol Inc., Chicago, Ill.
Maid-O'-Mist, Inc., Chicago, Ill.
McAlear Mfg. Co., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Newark Controls Co., Bloomfield, N. J.
Reliance Gauge Column Co., Cleveland, O.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Watts Regulator Co., Lawrence, Mass.

CUTTERS, FLAME FOR PIPING

H & M Pipe Beveling Machine Co., Tulsa, Okla.
Mathey Machine Works, Inc., C. A., Tulsa, Okla.
Modern Engineering Co., St. Louis, Mo.
National Cylinder Gas Div., Chemetron Corp., Chicago, Ill.
Orbit Sales Co., Inc., New Haven, Conn.
Steffan Mfg. Corp., Salem, O.
Universal Cutting & Welding Equipment Mfg. Co., Ft. Lauderdale, Fla.
Vernon Tool Co., Ltd., Alhambra, Calif.

CUTTERS, PIPE

Allison-Campbell Div. of American Chain & Cable Co., Inc., Bridgeport, Conn. (abrasive cut-off machines)
American Pipe Tool Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Baker & Co., R. H., Los Angeles, Calif.
Barnes Tool Co., The, Lexington, Mass.
Beaver Pipe Tools, Inc., Warren, O. (knife and wheel)
Collins Machinery Corp., Monterey Park, Calif.
Continental Machine Co., Chicago, Ill. (rotary)
Ellis & Ford Mfg. Co., Birmingham, Mich. (for cast iron and steel pipe)
Erie Tool Works, Erie, Pa.
Kalamazoo Tank & Silo Co., Machine Tool Div., Kalamazoo, Mich. (metal cutting band saw)
Kenco Mfg. Co., Los Angeles, Calif. (abrasive)
Landis Machine Co., Inc., Waynesboro, Pa.
M-M-A, Inc., Lancaster, Pa.
Mathey Machine Works, Inc., C. A., Tulsa, Okla.
Nye Tool Co., Chicago, Ill.
Obear & Sons, Inc., Inglewood, Calif. (abrasive)
Oster Mfg. Co., Wickliffe, O. (portable power)
Pilot Mfg. Co., Torrance, Calif. (asbestos-cement)
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Sac Tool Mfg. Co., St. Louis, Mo.
Saunders Mfg. Co., Yonkers, N. Y.
Springload Mfg. Corp., Seattle, Wash. (cast iron, clay, asbestos, cement)
Steffan Mfg. Corp., Salem, O.
Stratford Pipe Scalloper Co., Clearwater, Fla. (combined with template maker)
Talon Tools, Inc., North Arlington, N. J. (chain type)
Toledo Pipe Threading Machine Co., Toledo, O. (wheel, knife)
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass. (hand)
Wachs Co., E. H., The, Chicago, Ill. (portable electric and air drive)
Wallace Supplies Mfg. Co., Chicago, Ill. (abrasive)
Wheeler Mfg. Corp., The, Ashtabula, O. (hydraulic and manual)

CUTTERS, TUBING

Airetool Mfg. Co., Springfield, O.
Anderson Metals Corp., Kansas City, Mo.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Bonney Forge & Tool Works, Allentown, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Specialty Mfg. Co., Chicago, Ill.
Collins Machinery Corp., Monterey Park, Calif.
Continental Machine Co., Chicago, Ill.
Couplings Co., Chicago, Ill.
Duro Metal Products Co., Chicago, Ill.
Erie Tool Works, Erie, Pa.
Fenway Machine Co., Philadelphia, Pa. (also sheet metal)
Fine Products Co., Berwyn, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Kenco Mfg. Co., Los Angeles, Calif. (abrasive)
Landis Machine Co., Inc., Waynesboro, Pa.
Miller Mfg. Co., St. Paul, Minn.
Mueller Brass Co., Port Huron, Mich.
Nye Tool Co., Chicago, Ill.
Obear & Sons, Inc., Inglewood, Calif.
Oster Mfg. Co., Wickliffe, O. (portable power)
Owatonna Tool Co., Owatonna, Minn.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Penn Brass & Copper Co., Erie, Pa.
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Sac Tool Mfg. Co., St. Louis, Mo.
Snap-on Tools Corp., Kenosha, Wis.
Talon Tools, Inc., North Arlington, N. J.
Toledo Pipe Threading Machine Co., Toledo, O.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass. (hand)
Wallace Supplies Mfg. Co., Chicago, Ill.
Weatherhead Co., Ft. Wayne Div., Ft. Wayne, Ind.
Wiedeke Co., The Gustav, Dayton, O.
Wilson Manufacturing Co., Memphis, Tenn.

CYLINDERS, AIR OR HYDRAULIC

Airmatic Valve, Inc., Cleveland, O.
Bellows-Valvair, Div. of IBEC, Akron, O.
Commercial Shearing & Stamping Co., Youngstown, O.
Hanna Engineering Wks., Chicago, Ill.
Hannifin Co., A Div. of Parker-Hannifin Corp., Des Plaines, Ill.
Ledeen Mfg. Co., El Monte, Calif.

National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Owatonna Tool Co., Owatonna, Minn.
Siebring Mfg. Co., George, Ia.
Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.

DAMPERS, AIR, BACK-DRAFT

Air Conditioning Products Co., Detroit, Mich.
Air Control Products, Inc., Coopersville, Mich.
Air Flow Controls Co., Minneapolis, Minn.
American Foundry & Furnace Co., Bloomington, Ill.
American-Standard Industrial Div., Detroit, Mich.
American Warming & Ventilating Co., Toledo, O.
Ammerman Co., Inc., Stillwater, Minn.
Carnes Corp., Verona, Wis.
Elgo Shutter & Mfg. Co., Detroit, Mich.
Excelsior Steel Furnace Co., The, Chicago, Ill.
Jenn-Air Products Co., Indianapolis, Ind.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Maple City Furnace Co., Monmouth, Ill.
Senrac Industries, Madison, Wis.
United States Register Co., Battle Creek, Mich.

DAMPER OPERATORS

See Operators, Damper

DAMPER REGULATORS

See Regulators, Damper Sets

DAMPERS, DIFFUSER

Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Air Distribution Products Co., Los Angeles, Calif.
Air-Factors, Inc., Covina, Calif.
American Warming & Ventilating Co., Toledo, O.
Anemostat Corp. of America, New York, N. Y.
Barber-Colman Co., Rockford, Ill.
Carnes Corp., Verona, Wis.
Gallaher Co., The, Omaha, Neb.
General Air Products Corp., Cedar Grove, N. J.
Hart & Cooley Mfg. Co., Holland, Mich.
Lima Register Co., Lima, O.
Round Oak Div., Peerless Corp., Dowagiac, Mich.
Smith Co., J. B., Philadelphia, Pa.
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United States Register Co., Battle Creek, Mich.
Young Regulator Co., Cleveland, O.

DAMPERS, DUCT, MANUALLY OPERATED

Adams Co., The, Dubuque, Ia.
Adelta Mfg. Co., Inc., Philadelphia, Pa.
Air Conditioning Products Co., Detroit, Mich.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Air-Factors, Inc., Covina, Calif.
Air & Refrigeration Corp., New York, N. Y.
A-J Mfg. Co., Kansas City, Mo.
American Foundry & Furnace Co., Bloomington, Ill.
American Warming & Ventilating Co., Toledo.
Ammerman Co., Inc., Stillwater, Minn.
Anemostat Corp. of America, New York, N. Y.
Arex Co., Chicago, Ill.
Armstrong Fittings Co., Des Moines, Ia.
Atcor, Inc., Warren, Mich.
Barber-Colman Co., Rockford, Ill.
Carnes Corp., Verona, Wis.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Champion Furnace Pipe Co., Peoria, Ill.
Controlair Mfg. Co., Los Angeles, Calif.
Corite-Reynolds Corp., Des Plaines, Ill. (plastic)
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Elgo Shutter & Mfg. Co., Detroit, Mich.
Excelsior Steel Furnace Co., Chicago, Ill.
General Air Products Corp., Cedar Grove, N. J.
Hart & Cooley Mfg. Co., Holland, Mich.
Imperial Damper Co., New York, N. Y.
Inland Steel Products Co., Milwaukee, Wis.
Johnson Service Co., Milwaukee, Wis.
Krueger Air Conditioning Co., Tucson, Ariz.
Lennox Industries Inc., Marshalltown, Ia.
Maple City Furnace Co., Monmouth, Ill.
Marsto Machine Co., West Quincy, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Olsen Mfg. Co., C. A., Elyria, O.
Powers Regulator Co., Skokie, Ill.
Round Oak Div., Peerless Corp., Dowagiac, Mich.
Seelye Craftsmen, Inc., Minneapolis, Minn.
Thermotank, Inc., Air Products Div., Detroit.
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Union Damper Co., Union, Ill.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
United Sheet Metal Co., Inc., Columbus, O.
United States Register Co., Battle Creek, Mich.
Waterloo Register Co., Inc., Waterloo, Ia.
Williamson Co., Cincinnati, O.
Young Regulator Co., Cleveland, O.

DAMPERS, DUCT, REMOTE CONTROLLED

Air & Refrigeration Corp., New York, N. Y.
American Foundry & Furnace Co., Bloomington, Ill.
American Warming & Ventilating Co., Toledo.
Anemostat Corp. of America, New York.
Atcor, Inc., Warren, Mich.
Barber-Colman Co., Rockford, Ill.
Buensod-Stacey Corp., New York, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Combustion Equipment Co., Moline, Ill.
Connor Engineering Corp., Danbury, Conn.
Controlair Mfg. Co., Los Angeles, Calif.
Imperial Damper Co., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Maple City Furnace Co., Monmouth, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Rittling Corp., The, Buffalo, N. Y.
Seelye Craftsmen, Inc., Minneapolis, Minn.
Thermotank, Inc., Air Products Div., Detroit.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Union Damper Co., The, Union, Ill.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
Vapor Heating Corp., Chicago, Ill.
Young Regulator Co., Cleveland, O.

DAMPERS, FIRE, FUSIBLE LINK

Air Conditioning Products Co., Detroit, Mich.
Air Devices, Inc., New York, N. Y.
Air-Factors, Inc., Covina, Calif.
American Foundry & Furnace Co., Bloomington, Ill.
American Warming & Ventilating Co., Toledo, O.
Ammerman Co., Inc., Stillwater, Minn.
Anemostat Corp. of America, New York.
Arex Co., Chicago, Ill.
Atcor, Inc., Warren, Mich.
Carnes Corp., Verona, Wis.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Controlair Mfg. Co., Los Angeles, Calif.
Haertel Co., Walter, Minneapolis, Minn.
Imperial Damper Co., New York, N. Y.
Krueger Air Conditioning Co., Tucson, Ariz.
Maple City Furnace Co., Monmouth, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Seelye Craftsmen, Inc., Minneapolis, Minn.
Senrac Industries, Madison, Wis.
Union Damper Co., The, Union, Ill.
United Sheet Metal Co., Inc., Columbus, O.
United States Register Co., Battle Creek, Mich.
Young Regulator Co., Cleveland, O.

DAMPERS, PULSATION, FOR PIPING SYSTEMS

Campbell Co., J. A., Long Beach, Calif.
Chemiquip Co., New York, N. Y.
Greer Hydraulics, Inc., Los Angeles, Calif.
Industrial Acoustics Co., Inc., New York.
Taylor Forge & Pipe Works, Chicago, Ill.
Taylor Instrument Companies, Rochester, N. Y.
United States Register Co., Battle Creek, Mich.

DEAERATORS

Acker Corp., Meridian, Miss.
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Standard Industrial Div., Detroit.
American Water Softener Co., Philadelphia.
Baker, Inc., C. I., Lorain, O.
Belco Industrial Equipment Div., Bogue Electric Mfg. Co., Paterson, N. J.
Cochrane Corp., Philadelphia, Pa.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Elgin Softener Corp., Elgin, Ill.
Elliott Co., Jeannette, Pa.
General Filter Co., Ames, Ia.
Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Graver Water Conditioning Co., New York.
Hoppes Mfg. Co., Inc., Springfield, O.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Sims Co., Erie, Pa.
Sparkler-Filtrion Corp., North Chicago, Ill.
Stickle Steam Specialties Co., Indianapolis, Ind.
Whitlock Mfg. Co., W. Hartford, Conn.
Worthington Corp., Harrison, N. J.

DEEP WELL PUMPS

See Pumps, Deep Well

DEHUMIDIFIERS, ABSORPTION AND ADSORPTION

Abbeon Supply Co., Jamaica, N. Y.
Air Conditioning Engineering Co., Cambridge, Mass.
Bryant Mfg. Co., Indianapolis, Ind.
Cargocaire Engineering Corp., New York.
Desomatic Products Div., Atlantic Research Corp., Falls Church, Va.
Dryomatic Corp., Alexandria, Va.
Ellis & Watts Products, Inc., Cincinnati, O.
Floridin Co., Tallahassee, Fla.
Gannon Co., Russell R., Cincinnati, O.
Kaufman Co., H. J., Detroit, Mich.
Mobil Oil Co., Inc., New York, N. Y.
Niagara Blower Co., New York, N. Y.
Pittsburgh Lectrodryer Div., McGraw-Edison Co., Pittsburgh, Pa.
Speco, Inc., Cleveland, O.
Surface Combustion Corp., Toledo, O.
Tamms Industries Co., Chicago, Ill.
Universal Dynamics Corp., Arlington, Va.

DEHUMIDIFIERS FOR COMPRESSED AIR

Adams Co., Inc., R. P., Buffalo, N. Y.
Bendix Filter Div., Bendix Aviation Corp., Madison Heights, Mich.
Bryant Mfg. Co., Indianapolis, Ind.
Centrifix Corp., Houston, Tex.
Desomatic Products Div., Atlantic Research Corp., Falls Church, Va.
Dryomatic Corp., Alexandria, Va.
Ellis & Watts Products, Inc., Cincinnati, O.
Hankison Corp., Canonsburg, Pa.
Kaufman Co., H. J., The, Detroit, Mich.
Perfecting Service Co., Charlotte, N. C.
Pittsburgh Lectrodryer Div., McGraw-Edison Co., Pittsburgh, Pa.
Pritchard & Co. of California, J. F., Kansas City, Mo.
Royse Mfg. Co., Dallas, Tex.
Selas Corp. of America, Dresher, Pa.

DEHUMIDIFIERS, ELECTRIC PLUG-IN, FOR SMALL SPACES

Abbeon Supply Co., Jamaica, N. Y.
Addison Products Co., Addison, Mich.
Admiral Corp., Chicago, Ill.
Albion Div., McGraw-Edison Co., Albion, Mich.
Amana Refrigeration, Inc., Amana, Ia.

American Comfort Mfg. Co., Evanston, Ill.
Blissfield Mfg. Co., Blissfield, Mich.
Dryomatic Corp., Alexandria, Va.
Ebco Mfg. Co., Columbus, O.
Emerson Radio & Phono Corp., Jersey City, N.J.
Fedders Corp., Buffalo, N. Y.
Fresh'nd-Aire Company, Div. of Cory Corp., Chicago, Ill.
Frigid, Inc., Brooklyn, N. Y.
Gibson Refrigerator Co., Greenville, Mich.
Haertel Co., Walter, Minneapolis, Minn.
Mitchell Mfg. Co., Chicago, Ill.
Radio Corp. of America, RCA Victor Div., Camden, N. J.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Universal Dynamics Corp., Arlington, Va.
Vornado, Inc., Garfield, N. J.
Westinghouse Electric Corp., Electric Appliance Divisions, Columbus, O.
Whirlpool Corp., St. Joseph, Mich.

DEHUMIDIFIERS, SPRAY

See Washers, Air

DEHUMIDIFIERS, SPRAYED COIL

Air & Refrigeration Corp., New York, N. Y.
American-Standard Industrial Div., Detroit, Mich.
Blazer Corp., Passaic, N. J.
Buensod-Stacey Corp., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Governair Corp., Oklahoma City, Okla.
Kennard Products, American Air Filter Co., Louisville, Ky.
Marlo Coil Co., St. Louis, Mo.
Thermal Engineering Corp., Houston, Tex.
Trane Co., LaCrosse, Wis.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
York Div., Borg-Warner Corp., York, Pa.

DEHUMIDIFYING UNITS

See Unitary Air Conditioners; Dehumidifiers

DEHYDRANT AND ACID NEUTRALIZER, FOR REFRIGERATING SYSTEMS

Allin Mfg. Co., Chicago, Ill.
Berna Corp., Long Island City, N. Y.
Grace & Co., W. R., Davison Chemical Div., Baltimore, Md.
Highside Chemicals, Inc., Clifton, N. J.
McIntire Co., The, Livingston, N. J.
Mueller Brass Co., Port Huron, Mich.
Remco, Inc., Zelienople, Pa.

DEHYDRATORS, REFRIGERANT

Alco Valve Co., St. Louis, Mo.
Aluminum Co. of America, Pittsburgh, Pa.
American-Standard Controls Div., Detroit, Mich.
Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Belt-Ice Corp., Seattle, Wash.
Berna Corp., Long Island City, N. Y.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Eagle Chemical Co., Inc., Mobile, Ala.
Floridin Co., Tallahassee, Fla.
Hankison Corp., Canonsburg, Pa.
Henry Valve Co., Melrose Park, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Madden Brass Products Co., Aurora, Ill.
McIntire Co., The, Livingston, N. J.
Metrex Valve Co., Franklin Park, Ill.
Mobil Oil Co., Inc., New York, N. Y.
Mueller Brass Co., Port Huron, Mich.
Refrigeration Research, Inc., Brighton, Mich.
Remco, Inc., Zelienople, Pa.
Sealed Unit Parts Co., Inc., New York, N. Y.
Sporlan Valve Co., St. Louis, Mo.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Tube Manifold Corp., North Tonawanda, N. Y.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

Universal Dynamics Corp., Arlington, Va.
Wabash Corp., Chicago, Ill.

DENSIFIERS, CONCRETE, FOR INCREASING THERMAL CONDUCTIVITY

Johns-Manville Corp., New York, N. Y.
Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.

DESTROYERS, SOOT, CHEMICAL

Acme Chemical Co., Milwaukee, Wis.
Allen Co., Inc., L. B., Schiller Park, Ill.
Allen Co., Robert G. Mechanicsville, N. Y.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Bird-Archer Co., Philadelphia, Pa.
Black & White Chemical Co., New York.
Coughlan Co., G. N., West Orange, N. J.
General Filters, Inc., Novi, Mich.
Hercules Chemical Co., Inc., New York, N. Y.
Kenite Laboratory, Madison, N. J.
Magnus Chemical Co., Garwood, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Nalco Chemical Co., Chicago, Ill.
Norcross Co., Sterling E., Bloomfield, N. J.
Normal Chemical Co., St. Paul, Minn.
North American Mogul Products Co., Cleveland, O. (flue and chimney cleaners)
Nutmeg Chemical Co., New Haven, Conn.
Perolin Co., Inc., New York, N. Y.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Sci-eff-ec Labs., Chagrin Falls, O.
Saverite Engineering Co., Hoboken, N. J.
Smith Chemical Co., E. W., La Puente, Calif.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Tamms Industries Co., Chicago, Ill.
Warren Refining & Chemical Co., The, Cleveland, O.

DESUPERHEATERS, STEAM

Babcock & Wilcox Co., Boiler Div., Barberton, O.
Bailey Meter Co., Cleveland, O.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Foster Wheeler Corp., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Spence Engineering Co., Inc., Walden, N. Y.
Springfield Boiler Co., Springfield, Ill.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
Whitlock Mfg. Co., W. Hartford, Conn.

DETECTORS, CARBON MONOXIDE

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Mine Safety Appliances Co., Pittsburgh, Pa.
Nutt Co., Buell W., Los Angeles, Calif.
Pyrodyne, Inc., Los Angeles, Calif.

DETECTORS, LEAK, FUEL OIL

American Gas & Chemicals, Inc., Leak-Tec Div., New York, N. Y.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Instruments, Inc., Tulsa, Okla.
Mine Safety Appliances Co., Pittsburgh, Pa.
Photobell Co., Inc., New York, N. Y.
Pyrodyne, Inc., Los Angeles, Calif.
Yula Corp., Bronx, N. Y.

DETECTORS, LEAK, PIPING

American Gas & Chemicals, Inc., Leak-Tec Div., New York, N. Y. (gas, hydrogen, nitrogen, oxygen, ammonia, chloride)
Branson Instruments, Inc., Stamford, Conn.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Goldak Co., Inc., The, Glendale, Calif.
Met-L-Chek Co., Los Angeles, Calif.
National Aniline Div., Allied Chemical Corp., New York, N. Y.
Oxygen Equipment & Service Co., Chicago, Ill.
Pyrodyne, Inc., Los Angeles, Calif.

S.O.S. Products Co., Inc., Brooklyn, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Universal Controls Corp., Dallas, Tex.
Wilkinson Products Co., Pasadena, Calif.
Winton Products Co., Charlotte, N. C.
Zaco Laboratories, Cleveland, O.

DETECTORS, LEAK, REFRIGERANT

Airserco Mfg. Co., Pittsburgh, Pa.
Allin Mfg. Co., Chicago, Ill.
American Gas & Chemicals, Inc., Leak-Tec Div., New York, N. Y.
Bernz Co., Otto, Rochester, N. Y.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Chicago Forging and Mfg. Co., Chicago, Ill.
Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Devco Engineering, Inc., Control Systems Div., Caldwell, N. J.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Goss Gas, Inc., Glenshaw, Pa.
Highside Chemicals, Inc., Clifton, N. J.
Insto-Gas Corp., Detroit, Mich.
Justrite Mfg. Co., Chicago, Ill.
Kent-Moore Organization, Inc., Warren, Mich.
Kidde Mfg. Co., Inc., Bloomfield, N. J.
Lenk Mfg. Co., Franklin, Ky.
Linde Co., Div of Union Carbide Corp., New York, N. Y.
Modern Engineering Co., St. Louis, Mo.
National Cylinder Gas, Div. of Chemetron Corp., Chicago, Ill.
Smith Welding Equipment Corp., Minneapolis.
Turner Corp., Sycamore, Ill.
Vacuum-Electronics Corp., Plainview, L. I., N. Y.
Watsco, Inc., Hialeah, Fla.
Weldit, Inc., Detroit, Mich.

DETECTORS, LEAK, UNDERGROUND PIPING

Fisher Research Laboratory, Inc., Palo Alto, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Johnson-Williams Inc., Palo Alto, Calif.
Mine Safety Appliances Co., Pittsburgh, Pa.
Schneider Mfg. Co., Reading, Mass.

DETECTORS, OIL CONTAMINATION IN CONDENSATE

Instruments, Inc., Tulsa, Okla.
Photobell Co., Inc., New York, N. Y.
Sparkler-Filtrion Corp., North Chicago, Ill.

DETECTORS, SMOKE

See Indicators, Smoke; Alarms, Smoke

DETECTORS, VIBRATION

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American District Telegraph Co., New York, N. Y.
EPIC, Inc., New York, N. Y.
Korfund Co., Inc., Westbury, L. I., N. Y.
Scott, Inc., H. H., Inst. Div., Maynard, Mass.

DEVICES, ELECTROLYTIC, FOR PREVENTING CORROSION

American Platinum & Silver Div., Engelhard Industries, Inc., Newark, N. J. (silver plated anodes)
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Belmont Smelting & Refining Wks., Inc., Brooklyn, N. Y.
Electro Rust-Proofing Corp., Belleville, N. J.
Engelhard Industries, Inc., Instruments & Systems Div., East Newark, N. J.
Harco Corp., Cathodic Protection Div., Cleveland, O.
Magnode Products, Inc., Trenton, O.
Marlo Coil Co., St. Louis, Mo.
May Company, Galesburg, Ill.
National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
Patrol Valve Co., The, Cleveland, O.
Rotometals, San Francisco, Calif.
Sparkler-Filtrion Corp., North Chicago, Ill.

Steelcote Mfg. Co., St. Louis, Mo.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.

DEVICES, THERMOELECTRIC, FOR AIR CONDITIONING

General Thermoelectric Corp., Princeton, N. J.

DEW POINT INDICATORS

See Indicators, Dew Point

DIAPHRAGM VALVES

See Valves, Diaphragm

DIESEL ENGINES

See Engines, Diesel, for Fan, Pump and Compressor Drives

DIFFUSERS, AIR, BASEBOARD

A. & A. Register Co., Cleveland, O.
Air Control Products, Inc., Coopersville, Mich.
Air-Factors, Inc., Covina, Calif.
Airfloor Co. of California, Inc., Santa Fe Springs, Calif.
Anemostat Corp. of America, New York, N. Y.
Auer Register Co., Cleveland, O.
Carnes Corp., Verona, Wis.
Coleman Co., Inc., The, Wichita, Ks.
Corbman Bros., Inc., Philadelphia, Pa.
Hart & Cooley Mfg. Co., Holland, Mich.
Heating Assurance, Inc., Spokane, Wash.
Independent Register Co., Cleveland,O.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lima Register Co., Lima, O.
Midco Register Corp., St. Paul, Minn.
National Grille & Register Co., Cleveland, O.
Rock Island Register Co., Rock Island, Ill.
Smith Co., J. B., Philadelphia, Pa.
Standard Stamping & Perforating Co., Chicago, Ill.
Thermo-Base Div., Gerwin Industries, Inc., Michigan City, Ind.
Titus Mfg. Corp., Waterloo, Ia.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.

DIFFUSERS, AIR, CEILING

See also Grilles; Panels, Perforated, for Air Diffusions; Registers

A-J Mfg. Co., Kansas City, Mo.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Air Distribution Products Co., Los Angeles, Calif.
Air-Factors, Inc., Covina, Calif.
AirGuide Plastics Corp., Miami, Fla. (molded nylon)
Airson Co., Inc., Milwaukee, Wis.
Anemostat Corp. of America, New York, N. Y.
Ashburn Supply Co., Culver City, Calif.
Auer Register Co., Cleveland, O.
Austin Engineering & Mfg. Co., Inc., Ysleta, Tex.
B-G Engineering Co., Houston, Tex.
Barber-Colman Co., Rockford, Ill.
Carnes Corp., Verona, Wis.
Coleman Co., Inc., The, Wichita, Ks.
Connor Engineering Corp., Danbury, Conn.
Demuth & Sons, Inc., Charles, Mineola, L. I., N. Y.
Gallaher Co., The, Omaha, Neb.
General Air Products Corp., Cedar Grove, N. J.
Hart & Cooley Mfg. Co., Holland, Mich.
Independent Register Co., Cleveland, O.
Krueger Air Conditioning Co., Tucson, Ariz.
Lenly Mfg. Co., Inc., Los Angeles, Calif.
Lima Register Co., The, Lima, O.
Midco Register Corp., St. Paul, Minn.
Multi-Vent Div., Pyle-National Co., The, Chicago, Ill.
Smith Co., J. B., Philadelphia, Pa.
Standard Stamping & Perforating Co., Chicago, Ill.
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.

DIFFUSERS, AIR, CEILING WITH COMBINED LIGHTING FIXTURE

Air Devices, Inc., New York, N. Y.
Air-Factors, Inc., Covina, Calif.
Anemostat Corp. of America, New York.
Barber-Colman Co., Rockford, Ill.
Carnes Co., Verona, Wis.
Connor Engineering Corp., Danbury, Conn.
Demuth & Sons, Inc., Charles, Mineola, L. I., N. Y.
Multi-Vent Div., Pyle-National Co., The, Chicago, Ill.
Titus Mfg. Corp., Waterloo, Iowa.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Universal Diffuser Corp., Tuckahoe, N. Y.
Wakefield Co., The, Vermilion, O.

DIFFUSERS, AIR, CEILING, COMBINED WITH SPRINKLER HEAD

Anemostat Corp. of America, New York, N. Y.

DIFFUSERS, AIR, FLOOR

A. & A. Register Co., Cleveland, O.
A-J Mfg. Co., Kansas City, Mo.
Adelta Mfg. Co., Inc., Philadelphia, Pa.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Anemostat Corp. of America, New York, N. Y.
Auer Register Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Coleman Co., Inc., The, Wichita, Ks.
Hart & Cooley Mfg. Co., Holland, Mich.
Independent Register Co., Cleveland, O.
Knowles Mushroom Ventilator Co., Inc., Philadelphia, Pa.
Lenly Mfg. Co., Inc., Los Angeles, Calif.
Lima Register Co., Lima, O.
Ritter Pattern & Casting Co., Inc., New York.
Rock Island Register Co., Rock Island, Ill.
Smith Co., J. B., Philadelphia, Pa.
Titus Mfg. Corp., Waterloo, Ia.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.
Waterloo Register Co., Inc., Waterloo, Ia.

DIFFUSERS, AIR, HIGH PRESSURE

Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
American Warming & Ventilating Co., Toledo, O.
Anemostat Corp. of America, New York, N. Y.
Barber-Colman Co., Rockford, Ill.
Coleman Co., Inc., The, Wichita, Ks.
Connor Engineering Corp., Danbury, Conn.
Independent Register Co., Cleveland, O.
Lima Register Co., Lima, O.
Thermotank, Inc., Air Products Div., Detroit, Mich.
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United Sheet Metal Co., Inc., Columbus, O.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.

DIFFUSERS, AIR, WALL

A. & A. Register Co., Cleveland, O.
A-J Mfg. Co., Kansas City, Mo.
Adelta Mfg. Co., Inc., Philadelphia, Pa.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Air Distribution Products Co., Los Angeles
Air-Factors, Inc., Covina, Calif.
American Warming & Ventilating Co., Toledo, O.
Anemostat Corp. of America, New York, N. Y.
Auer Register Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Carnes Corp., Verona, Wis.
Coleman Co., Inc., The, Wichita, Ks.
Connor Engineering Corp., Danbury, Conn.
Demuth & Sons, Inc., Charles, Mineola, L. I., N. Y.

General Air Products Corp., Cedar Grove, N. J.
Hart & Cooley Mfg. Co., Holland, Mich.
Independent Register Co., Cleveland, O.
Lenly Mfg. Co., Inc., Los Angeles, Calif.
Lima Register Co., Lima, O.
Metal Industries, Inc., Clearwater, Fla.
Midco Register Corp., St. Paul, Minn.
National Grille & Register Co., Cleveland, O.
Rock Island Register Co., Rock Island, Ill.
Smith Co., J. B., Philadelphia, Pa.
Thermotank, Inc., Air Products Div., Detroit, Mich.
Titus Mfg. Corp., Waterloo, Ia.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.
Waterloo Register Co., Inc., Waterloo, Ia.

DIFFUSION, AIR

See Panels, Perforated, for Air Diffusion

DISTRIBUTORS, REFRIGERANT, FOR COOLING COILS

Alco Valve Co., St. Louis, Mo.
American-Standard Controls Div., Detroit, Mich.
General Controls Co., Glendale, Calif.
Refrigeration Research, Inc., Brighton, Mich.
Sporlan Valve Co., St. Louis, Mo.

DISTRIBUTORS, WATER, FOR CONDENSERS

Hubbell Corp., Mundelein, Ill.
Vilter Mfg. Co., The, Milwaukee, Wis.

DOOR CONTROLS

See Controls, Door, Electric Eye

DOOR GRILLES

See Grilles, Door

DOORS AND PANELS, ACCESS

Adams Co., The, Dubuque, Ia.
Air Control Products, Inc., Coopersville, Mich.
Air & Refrigeration Corp., New York, N. Y.
American Metal Works, Inc., New Orleans, La.
Ammerman Co., Inc., Stillwater, Minn.
Auer Register Co., Cleveland, O.
Biersach & Niedermeyer Co., Milwaukee, Wis.
Camloc Fastener Corp., Paramus, N. J. (Fasteners for access panels and sheet metals)
Carey Mfg. Co., Philip, Cincinnati, O.
Falstrom Co., Passaic, N. J.
Haertel Co., Walter, Minneapolis, Minn.
Hohman & Bernard Inc., New York, N. Y.
Inland Steel Products Co., Milwaukee, Wis.
Knapp Bros. Mfg. Co., Cincinnati, O.
Littleford Bros., Inc., Cincinnati, O.
Lumm Co., A. H., Toledo, O.
Midwest Noise Control, Indianapolis, Ind.
Technical Ply-Woods Sales, Chicago, Ill.
Titus Mfg. Corp., Waterloo, Ia.
Ventfabrics, Inc., Chicago, Ill.
Walsh-Hannon-Gladwin, Inc., Boston, Mass.
Western Wire & Iron Works, Inc., Chicago, Ill. **(Metal)**
Zurn Industries, Inc., Erie, Pa.

DOORWAYS, AIR CURTAIN, FOR LARGE ENTRANCES

(Including nozzles, fans, ducts, heating and cooling coils, etc.)

Airdoor, Inc., Div. of New Castle Products, Inc., New Castle, Ind.
American Air Curtain Corp., St. Louis, Mo.
Dunham-Bush, Inc., West Hartford, Conn.

DOUBLE DUCT MIXING UNITS, SOUND AND VOLUME CONTROL, FOR AIR CONDITIONING SYSTEMS

See Units, Mixing, Sound and Volume Control, for Double Duct High Velocity Air Conditioning Systems

DRAFT CONTROL

See Controls, Draft, Barometric; Regulators, Draft, Combustion

DRAFT GAGES
See Gages, Indicating, Draft

DRAFT RECORDERS
See Recorders, Draft

DRAFT REGULATORS
See Controls, Draft, Barometric; Regulators, Draft, Combustion

DRAINS, TANK, FOR HOT WATER HEATING SYSTEM EXPANSION TANKS
Quality Specialty Co., Inc., Camden, N. J.
Thrush & Co., H. A., Peru, Ind.

DRAWING TEMPLATES, PIPING
See Templates, Drawing, Piping

DRIERS
See Dehydrators, Refrigerant

DRILLS, ELECTRIC AND PNEUMATIC, PORTABLE
Airetool Mfg. Co., Springfield, O.
Albertson & Co., Inc., Sioux City, Ia.
Black & Decker Mfg. Co., Towson, Md.
Buckeye Tools Corp., Dayton, O.
Chicago Pneumatic Tool Co., New York, N. Y.
Cummins Portable Tools, Div. of John Oster Mfg. Co., Milwaukee, Wis.
Dayton Electric Mfg. Co., Chicago, Ill.
Demo-Haines Tool Corp., El Segundo, Calif.
Diamond Products, Inc., Elyria, O.
Gardner-Denver Co., Quincy, Ill.
Hoffacker Machine Tool Co., Cranston, R. I.
Hydrauger Corp., Ltd., San Francisco, Calif.
Ingersoll-Rand Co., New York, N. Y.
Joy Mfg. Co., Pittsburgh, Pa.
Millers Falls Co., Greenfield, Mass.
Milwaukee Electric Tool Corp., Milwaukee, Wis.
Modern Mfg. Co., Inc., Willow Grove, Pa.
Molco Drilling Machines, Inc., Washington, D.C.
Nielsen, Inc., E. V., Stamford, Conn.
Portable Electric Tools, Inc., Geneva, Ill.
Porter-Cable Machine Co., Syracuse, N. Y.
Price & Rutzebeck, Hayward, Calif. (angle)
Remington Arms Co., Inc., Bridgeport, Conn.
Rotor Tool Co., Cleveland, O.
Schramm, Inc., West Chester, Pa.
Skil Corp., Chicago, Ill.
Snap-on Tools Corp., Kenosha, Wis.
Speedway Mfg. Co., Div. of Thor Power Tool Co., LaGrange Park, Ill.
Stanley Electric Tools Div., Stanley Works, The, New Britain, Conn.
Superior Pneumatic & Mfg. Co., Inc., Cleveland, O.
Tempo Products Co., Cleveland, O.
Thor Power Tool Co., Aurora, Ill.
Truco Masonry Drilling Div., Wheel Trueing Tool Co., Detroit, Mich.
U. S. Electrical Tool Co., Cincinnati, O.
Wen Products, Inc., Chicago, Ill.
Wilson, Inc., Thomas C., Long Island City, N. Y.
Wodack Electric Tool Corp., Chicago, Ill.
Worthington Corp., Harrison, N. J.

DRILLS, MASONRY
Arro Expansion Bolt Co., Marion, O.
Atlas Copco Eastern, Inc., Paramus, N. J.
Bulldog Div., Gregory Industries, Inc., Lorain, O.
Chicago Expansion Bolt Co., Chicago, Ill.
Chicago Pneumatic Tool Co., New York, N. Y.
Clipper Mfg. Co., Kansas City, Mo.
Demo-Haines Tool Corp., El Segundo, Calif.
Diamond Core & Saw Div., Portomag, Inc., Ferndale, Mich.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Diamond Products, Inc., Elyria, O. (diamond)
Evans Co., Robert G., Kansas City, Mo.
Geo-Drill Co., Bridgeville, Pa.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Hamer-Dril Co., New York, N. Y.
Hamlin Co., Inc., J. F., San Francisco, Calif.
Holub Industries, Inc., Sycamore, Ill.
Kor-It Co., Inc., Santa Clara, Calif.
Longyear Co., E. J., Minneapolis, Minn.
Metallurgical Products Dept. of General Electric Co., Detroit, Mich. (carboloy; cemented carbide)
Mobile Drilling, Inc., Indianapolis, Ind.
Molco Drilling Machines, Inc., Washington, D. C.
Moorhead-Crego, Inc., Cleveland, O.
New England Carbide Tool Co., Inc., Medford, Mass. (portable drilling machines)
Nielsen, Inc., E. V., Stamford, Conn.
Paine Co., Addison, Ill.
Phillips Drill Co., Michigan City, Ind.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Rawlplug Co., Inc., The, New Rochelle, N. Y.
Relton Corp., Pasadena, Calif.
Remington Arms Co., Inc., Bridgeport, Conn.
Samson Drill Co., Bronx, N. Y.
Skil Corp., Chicago, Ill.
Smit & Sons, Inc., J. K., Murray Hill, N. J. (diamond)
Star Expansion Industries Corp., Mountainville, N. Y.
Super Tool Co., Detroit, Mich.
Tempo Products Co., Cleveland, O.
Thor Power Tool Co., Aurora, Ill.
Threadwell Tap & Die Co., Greenfield, Mass.
Timesaver Tools Co., Bedford Heights, O.
Truco Masonry Drilling Div., Wheel Trueing Tool Co., Detroit, Mich.
U. S. Expansion Bolt Co., York, Pa.
Williams & Co., J. H., Buffalo, N. Y.
Wodack Electric Tool Corp., Chicago, Ill.

DRIVES, CHAIN
Boston Gear Works, Quincy, Mass.
Browning Mfg. Co., Maysville, Ky.
Chain Belt Co., Milwaukee, Wis.
Dodge Mfg. Corp., Mishawaka, Ind.
Ft. Worth Steel & Machinery Co., Ft. Worth.
Jeffrey Mfg. Co., Columbus, O.
Link Belt Co., Chicago, Ill.
Maurey Mfg. Corp., Chicago, Ill.
Morse Chain Co., Ithaca, N. Y.
Ramsey Products Corp., Albany, N. Y.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Whitney Chain Co., Hartford, Conn.

DRIVES, COOLING TOWER FAN
Cleveland Worm & Gear Div., Eaton Mfg. Co., Cleveland, O.
Doerr Electric Corp., Cedarburg, Wis.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich.
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Maurey Mfg. Corp., Chicago, Ill.
Philadelphia Gear Corp., King of Prussia, Pa.
Reliance Electric & Engineering Co., Cleveland, O.

DRIVES, FLAT BELT
See also Belting, Leather and Belting, Rubber
American Pulley Co., Div. Van Norman Industries, Inc., Philadelphia, Pa.
Browning Mfg. Co., Maysville, Ky.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Dodge Mfg. Corp., Mishawaka, Ind.
Extremultus, Inc., Long Island City, N. Y.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
New York Belting & Packing Co., Passaic, N. J.
Pyott Foundry & Machine Co., Aurora, Ill.
Rhoads & Sons, J. E., Wilmington, Del.
Williams & Son, I. B., Dover, N. H.
Wood's Sons Co., T. B., Chambersburg, Pa.

DRIVES, FLUID OR HYDRAULIC, FOR POWER TRANSMISSION
American-Standard Industrial Div., Detroit, Mich.
Dodge Mfg. Corp., Mishawaka, Ind.
Horton Mfg. Co., Minneapolis, Minn.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich.
Link Belt Co., Chicago, Ill.
Morse Chain Co., Ithaca, N. Y.
Sundstrand Hydraulics, Rockford, Ill.
Twin Disc Clutch Co., Rockford, Ill.
Zurn Industries, Inc., Erie, Pa.

DRIVES, GEAR
Boston Gear Works, Quincy, Mass.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cleveland Worm & Gear Div., Eaton Mfg. Co., Cleveland, O.
Electro Dynamic Div., General Dynamics Corp., Bayonne, N. J.
Falk Corp., Milwaukee, Wis.
Hewitt-Robins, Inc., Stamford, Conn.
Lima Electric Motor Co., Inc., The, Lima, O.
Link-Belt Co., Chicago, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Master Electric Co., Div. of Reliance & Engineering Co., Dayton, O.
Philadelphia Gear Corp., King of Prussia, Pa.
Pyott Foundry & Machine Co., Aurora, Ill.
Reliance Electric Engineering Co., Cleveland, O.
Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.
U. S. Electrical Motors, Inc., Los Angeles, Calif.
Zurn Industries, Inc., Erie, Pa.

DRIVES, POWER FOR PIPE THREADING
Beaver Pipe Tools, Inc., Warren, O.
Oster Mfg. Co., Wickliffe, O.
Ridge Tool Co., Elyria, O.
Toledo Pipe Threading Machine Co., Toledo, O.

DRIVES, SHAFT MOUNTED
American Pulley Co., The, Div. Van Norman Industries, Inc., Philadelphia, Pa.
Boston Gear Works, Quincy, Mass.
Dodge Mfg. Corp., Mishawaka, Ind.
Falk Corp., Milwaukee, Wis.
Hewitt-Robins, Inc., Stamford, Conn.
Link-Belt Co., Chicago, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Philadelphia Gear Corp., King of Prussia, Pa.
Salsbury Corp., Los Angeles, Calif.
Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.
U. S. Electrical Motors Inc., Los Angeles, Calif.
Warner Electric Brake & Clutch Co., Beloit, Wis.

DRIVES, V BELT
American Pulley Co., Div. Van Norman Industries, Inc., Philadelphia, Pa.
Browning Mfg. Co., Maysville, Ky.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Congress Drives Div., Tann Corp., Detroit, Mich.
Dayco Corp., Dayton, O.
Dayton Industrial Products Co., Melrose Park, Ill.
Dodge Mfg. Corp., Mishawaka, Ind.
Durkee-Atwood Co., Minneapolis, Minn.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Gates Rubber Co., The, Denver, Colo.
Goldens' Foundry & Machine Co., Columbus, Ga.
Hewitt-Robins, Inc., Stamford, Conn.
Horton Mfg. Co., Minneapolis, Minn.
Indus Corp., Indianapolis, Ind.
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill.
Link-Belt Co., Chicago, Ill.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Maurey Mfg. Corp., Chicago, Ill.
New York Belting & Packing Co., Passaic, N. J.
Pyott Foundry & Machine Co., Aurora, Ill.
Raybestos-Manhattan, Inc., Passaie, N. J.
Speed Selector Inc., Chagrin Falls, O.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
V-Belt Clutch Co., Los Angeles, Calif.
Wood's Sons Co., T. B., Chambersburg, Pa.
Worthington Corp., Harrison, N. J.

DRIVES, VARIABLE SPEED
See Changers, Speed, Hydraulic Coupling; Changers, Speed, Mechanical; Reducers, Speed; Pulleys and Sheaves, for Belt Drives

DRYERS, CROP
Campbell Heating Co., Des Moines, Ia.

Chicago Blower Corp., Franklin Park, Ill.
Clay Equipment Corp., Cedar Falls, Ia.
Day Co., The, Minneapolis, Minn.
Kinney Vacuum Div., The New York Air Brake Co., Boston, Mass. (vacuum)
Lennox Industries, Inc., Des Moines, Ia.
Link-Belt Co., Chicago, Ill.
National Heater Co., Inc., St. Paul, Minn.
Refrigeration Research, Inc., Brighton, Mich.
Siebring Mfg. Co., George, Ia.
Silent Glow Oil Burner Co., Hartford, Conn.
Zink Co., John, Tulsa, Okla.

DRYERS FOR COMPRESSED AIR

See Dehumidifiers for Compressed Air

DRYERS, INDUSTRIAL (COMPARTMENT, TUNNEL CONVEYOR, VACUUM, SPRAY, ROTARY, ETC.)

Aerotec Corp., The, Greenwich, Conn.
Air & Refrigeration Corp., New York, N. Y.
Beltran Associates, Inc., Brooklyn, N. Y.
Biggs Boiler Works Co., The, E. Akron, O.
Blaw Knox Co., Buflovak Equipment Div., Buffalo. N. Y.
Bowen Engineering, Inc., North Branch, N. J.
Combustion Engineering, Raymond Div., Chicago, Ill.
Day Co., The, Minneapolis, Minn.
Dean Products, Inc., Brooklyn, N. Y.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Drying Systems Co., Chicago, Ill.
Jeffrey Mfg. Co., Columbus, O.
Kirk & Blum Mfg. Co., Cincinnati, O.
Link-Belt Co., Chicago, Ill.
Louisville Drying Machinery Unit, General American Transportation Corp., Louisville, Ky.
Mahon Co., R. C., The, Detroit, Mich.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis. (rotary)
Newcomb-Detroit Co., Detroit, Mich.
Niagara Blower Co., New York, N. Y.
Peters-Dalton, Inc., Detroit, Mich.
Proctor & Schwartz, Inc., Philadelphia, Pa.
Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
Schmieg Industries, Inc., Detroit, Mich.
Selas Corp. of America, Dresher, Pa.
Universal Dynamics Corp., Arlington, Va.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Western Precipitation Corp., Los Angeles, Calif.
Whiting Corp., Harvey, Ill.
Wiegand Co., Edwin L., Pittsburgh, Pa. (electric)

DRYERS, REFRIGERANT

See Dehydrators, Refrigerant

DUAL THERMOSTATS

See Thermostats, Two Temperature or Dual

DUCT CONNECTIONS

See Connections, Duct, Flexible; Connectors for Non-Metallic Duct Fabrication

DUCT FURNACES

See Heaters, Duct

DUCT HANGING CLAMPS

See Clamps, Beam, Duct Hanging

DUCT HEATERS

See Heaters, Duct

DUCT INSULATION

See Insulation, Duct

DUCT REPAIR KITS

See Kits, Repair for Pipes, Tanks, Valves, Flanges, and ducts

DUCT SILENCERS

See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Insulation, Duct, Sound Deadening

DUCT TAPE

See Tape, Duct, Adhesive, for Sealing Joints

DUCT THERMOSTATS

See Thermostats, Duct Type

DUCT TURNING VANES

See Vanes, Duct Turning, Prefabricated

DUCTS AND DUCT FITTINGS, PREFABRICATED, FLEXIBLE, METALLIC

Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Buckeye Mfg., Inc., Columbus, O.
Coleman Co., Inc., The, Wichita, Kans.
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
Jet-Heet, Inc., Englewood, N. J.
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co., San Francisco, Calif.
Round Oak Div., Peerless Corp., Dowagiac, Mich.
Solar Aircraft Co., San Diego, Calif.

DUCTS AND DUCT FITTINGS, PREFABRICATED, FLEXIBLE, NON-METALLIC

Alasco Rubber & Plastics Corp., San Bruno, Calif. (rubber)
American Agile Corp., Bedford, O. (polyethylene)
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Flexaust Co., New York, N. Y.
Flexible Tubing Corp., Guilford, Conn.
United States Rubber Co., New York, N. Y.
Wiremold Co., Hartford, Conn.

DUCTS AND DUCT FITTINGS, PREFABRICATED, NON-FLEXIBLE, METALLIC

Acme Mfg. Co., Philadelphia, Pa.
Acer & Whedon, Inc., Medina, N. Y.
Airfloor Co. of California, Inc., Santa Fe Springs, Calif.
Armstrong Fittings Co., Des Moines, Ia.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Champion Furnace Pipe Co., Peoria, Ill.
Corbman Bros., Inc., Philadelphia, Pa.
Ervite Corp., Erie, Pa. (enamel lined or glass coated for corrosive fume removal systems)
Excelsior Steel Furnace Co., The, Chicago, Ill.
General Metals, Inc., Greensboro, N. C.
Goethel Sheet Metal Works, Inc., Milwaukee, Wis.
Henry Furnace Co., The, Medina, O.
HI-PRESS Air Conditioning of America, Inc., New York, N. Y.
Inland Steel Products Co., Milwaukee, Wis.
Lennox Industries Inc., Columbus, O.
Lennox Industries Inc., Des Moines, Ia.
Lennox Industries Inc., Marshalltown, Ia.
Maurlee Co., Inc., Woodbury Heights, N. J.
Meyer & Bro. Co., F., Peoria, Ill.
Middlesex Paper Tube Co., Inc., Lowell, Mass. (impregnated paper tubes)
Norwalk Air Conditioning Corp., S. Norwalk, Conn.
Olsen Mfg. Co., C. A., Elyria, O.
Portland Copper & Tank Wks., Inc., South Portland, Me. (stainless steel)
Pressure Airduct Corp., Skokie, Ill. (for high velocity systems)
Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Robertson Co., H. H., Pittsburgh, Pa.
United Sheet Metal Co., Inc., Columbus, O.
United States Register Co., Battle Creek, Mich.
Waverly Heating Supply Co., Beverly, Mass.
Williamson Co., Cincinnati, O.
Zack Co., The, Chicago, Ill.

DUCTS AND DUCT FITTINGS, PREFABRICATED, NON-FLEXIBLE, NON-METALLIC

Acme-Hamilton Mfg. Corp., Trenton, N. J.
American Agile Corp., Bedford, O.
American Vitrified Products Co., Cleveland, O.
Argo Plastic Products, Cleveland, O.
Atlas Mineral Products Co., Mertztown, Pa.
Ceilcote, Inc., Cleveland, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (Unplasticized polyvinyl chloride)
Corite-Reynolds Corp., Des Plaines, Ill. (plastic)
Delbrook Engineering, Inc., Cambridge, Mass.
DuVerre, Inc., Buffalo, N.Y. (polyester bonded fiber glass)
Electro-Chemical Products Corp., Cleveland, O. (PVC plastic)
Granco Steel Products Co., St. Louis, Mo. (underfloor air plenum)
Gustin-Bacon Mfg. Co., Kansas City, Mo. (glass fiber)
Haveg Industries, Inc., Wilmington, Del. (for fumes)
Heil Process Equipment Corp., Cleveland, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC & polyethylene)
Johns-Manville Corp., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa. (asbestos — cement pipe)
Knight Co., Maurice A., Akron, O. (acid proof; furan resin and polyester with glass cloth)
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (PVC; rubber; PVC lined; rigid PVC)
Met-L-Wood Corp., Chicago, Ill. (combination wood and sheet metal)
Molded Fiber Glass Sheet Co., Ashtabula, O.
Owens-Corning Fiberglas Corp., New York, N. Y.
Richkraft Co., Chicago, Ill.
Robinson Clay Product Co., The, Akron, O.
S & C Mfg. Co., Cincinnati, O. (plastic)
Sonoco Products Co., Construction Products Div., Hartsville, S. C.
Straitsville Brick Co., New Straitsville, O.
Texas Vitrified Pipe Co., Mineral Wells, Tex.
United States Rubber Co., New York, N. Y.
Woodall Industries, Inc., Detroit, Mich.

DUCTS, FLEXIBLE

See Ducts and Duct Fittings, Prefabricated, Flexible, Non-Flexible, Metallic and Non-Metallic

DUCTS, SPIRAL WELDED

Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Spiro U.S.A., Inc., Chicago, Ill.
United Sheet Metal Co., Columbus, O.
Worthington Corp., Harrison, N. J.
York Div., Borg-Warner Corp., York, Pa.

DYE PENETRANT

See Penetrant, Dye

DUST BAGS FOR DUST COLLECTORS

See Bags, Dust, for Dust Collectors

DUST COLLECTORS

See Collectors, Dust

DUST COUNTERS

See Counters, Dust

ECONOMIZERS, FUEL

Babcock & Wilcox Co., Boiler Div., Barberton, O.
Bros Inc., Minneapolis, Minn.
Buxton Mfg. Co., Dover, N. J.
Combustion Engineering Inc., New York.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Ellicott Fabricators, Inc., Baltimore, Md.
Farris Engineering Corp., Palisades Park, N. J.
Foster Wheeler Corp., New York, N. Y.
Green Fuel Economizer Co., Inc., The, Beacon, N. Y.
Old Dominion Iron & Steel Corp., Richmond, Va.
Richmond Engineering Co., Richmond, Va.
Springfield Boiler Co., Springfield, Ill.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.

EJECTORS, SEWAGE

American-Marsh Pumps, Inc., Battle Creek, Mich.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.

Davidson Co., M. T., New York, N. Y.
Nash Engineering Co., South Norwalk, Conn.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Swaby Mfg. Co., Chicago, Ill.
Weil Pump Co., Chicago, Ill.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Worthington Corp., Harrison, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

ELBOWS AND TEES, BALANCING, FOR HOT WATER HEATING AND CHILLED WATER SYSTEMS

American-Standard Controls Div., Detroit, Mich.
Bernstrom, Inc., C. R., Providence, R. I.
Dunham-Bush, Inc., West Hartford, Conn.
Hammond Valve Corp., Hammond, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis.
Modern Flo-Trol Products Co., Babylon, N. Y.
New York Brass Foundry, New York, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Thrush & Co., H. A., Peru, Ind.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

ELECTRIC AIR CLEANERS

See Filters, Air, Electrostatic (with outside power source)

ELECTRIC BOILERS AND STEAM GENERATORS

See Generators, Steam, Electric

ELECTRIC DRILLS

See Drills, Electric, Portable

ELECTRIC MOTORS

See Motors, Electric

ELECTRIC PIPE HEATING SYSTEMS

See Systems, Electric Pipe Heating

ELECTRIC RADIANT HEATING

See Panels, Electric Heating

ELECTRIC SHEARS

See Shears, Electric, Portable

ELECTRIC UNIT HEATERS

See Heaters, Unit, Electric Heating Element

ELECTRICAL AIR FILTERS

See Filters, Air, Electrostatic (with outside power source)

ELECTRODES, ARC WELDING

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Alloy Rods Co., York, Pa.
Ampco Metals, Inc., Milwaukee, Wis.
Arcos Corp., Philadelphia, Pa.
Biersach & Niedermeyer Co., Milwaukee.
Burdett Oxygen Co. of Calif., Huntington Park, Calif.
Central Steel & Wire Co., Chicago, Ill.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Harnischfeger Corp., Milwaukee, Wis.
Hobart Bros. Co., Troy, O.
Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
International Nickel Co., Inc., The, New York, N. Y.
Lincoln Electric Co., Cleveland, O.
Linde Co., Div. of Union Carbide Corp., New York, N.Y.
Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.
Maurath, Inc., Cleveland, O.
McKay Co., Pittsburgh, Pa.
Metal & Thermit Corp., Rahway, N. J.
Mir-O-Col Alloy Co., Inc., Los Angeles, Calif. (for hard facing)
National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
National Cylinder Gas, Div. of Chemetron Corp., Chicago, Ill.
Page Steel & Wire, Div. of American Chain & Cable Co., Inc., Monessen, Pa.
Rexarc, Inc., West Alexandria, O.
Smith Corp., A. O., Milwaukee, Wis.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weldit, Inc., Detroit, Mich.
Westinghouse Electric Corp., WEST-ING-ARC Dept., Buffalo, N. Y.

ELECTRODES, OIL BURNER

Auburn SparkPlug Co., Inc., Auburn, N. Y.
Crown Engineer Corp., Keyport, N. J.
Dielectric Products Co., Inc., Jersey City, N. J.
Steinen Mfg. Co., Wm., Newark, N. J.

ELECTROSTATIC AIR FILTERS

See Filters, Air, Electrostatic (with outside power source)

ELIMINATORS, AIR, FOR HEATING AND PIPING SYSTEMS

American Tube & Controls, Inc., West Warwick, R. I.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Armstrong Machine Works, Three Rivers, Mich.
Bell & Gossett Co., Morton Grove, Ill.
Continental Mfg. Co., Baltimore, Md.
Dole Valve Co., The, Morton Grove, Ill.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
General Automatic Products Corp., Baltimore.
Gorton Heating Corp., Cranford, N. J.
Heat-Timer Corp., New York, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Kaye & MacDonald, Inc., West Orange, N. J.
Keeney Mfg. Co., Newington, Conn.
Maid-O'-Mist, Inc., Chicago, Ill.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
McAlear Mfg. Co., Chicago, Ill.
Modern Flo-Trol Products Co., Babylon, N. Y.
Morheat Corp., Cincinnati, O.
Multiplex Mfg. Co., Berwick, Pa.
New York Air Valve Corp., Brooklyn, N. Y.
Quality Specialty Co., Inc., Camden, N. J.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Southern Plastics Co., Columbia, S. C.
Squires Co., C. E., The, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, La Crosse, Wis.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.

ELIMINATORS, SLUG, REFRIGERANT

Blazer Corp., Passaic, N. J.
Patterson-Kelley Co., The, East Stroudsburg, Pa.
Southern Plastics Co., Columbia, S. C.
Watkins Co., J. E., Maywood, Ill.

ENAMELS AND LACQUERS

Acorn Refining Co., Cleveland, O.
Arco Co., The, Cleveland, O.
Barreled Sunlight Paint Co., Providence, R. I.
Barrett Div., Allied Chemical Corp., New York, N. Y. (pipeline and waterworks enamels)
Blue Ridge Talc Co., Inc., Henry, Va.
Claronex Products, Inc., Brooklyn, N. Y.
Cordo Chemical Corp., Norwalk, Conn.
Corrosion Control Co., Inc., New York, N. Y.
Debevoise Co., The, Brooklyn, N. Y.
Dennis Chemical Co., St. Louis, Mo.
Dixon Crucible Co., Joseph, Jersey City, N. J.
du Pont de Nemours & Co., E. I., Finishes Div., Wilmington, Del.
Glidden Co., Midwest Industrial Div., Chicago, Ill.
Hague & Co., Inc., Alfred, Div. of Lacquer & Chemical Corp., Brooklyn, N. Y.
Heresite & Chemical Co., Manitowoc, Wis. (air dry pure phenolic & chlorinated rubber coatings)
Hilo Varnish Corp., Div. of Carpenter-Morton Co., Everett, Mass.
Horn Companies, A. C., Subsidiary of Sun Chemical Corp., New York, N. Y.
Illinois Bronze Powder Co., Chicago, Ill.
Inter-Coastal Paint Corp., East St. Louis, Ill.
Interchemical Corp., Finishes Div., Newark, N. J.
Irvington Div., Minnesota Mining & Mfg. Co., Freehold, N. J.
Knight Co., Maurice A., Akron, O.
Koppers Co., Inc., Pittsburgh, Pa.
Krylon, Inc., Norristown, Pa.
Master Mechanics Co., Cleveland, O.
Metal & Thermit Corp., Rahway, N. J.
Midland Industrial Div., The Harrison Paint & Varnish Co., Canton, O.
National Lead Co., New York, N. Y.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Quigley Co., Inc., New York, N. Y.
Rutland Fire Clay Co., Rutland, Vt.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Sandstrom Products Co., Port Byron, Ill.
Sherwin-Williams Co., The, Cleveland, O.
Sipe & Co., James B., Pittsburgh, Pa.
Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.
Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga.
Steelcote Mfg. Co., St. Louis, Mo.
Thompson and Co., Oakmont, Pa.
Tropical Paint Co., Cleveland, O.
Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich.
Valdura Div., American-Marietta Co., Chicago, Ill.
Warren Refining & Chemical Co., The, Cleveland, O.
Watson-Standard Co., Pittsburgh, Pa.
Wilbur & Williams Co., Norwood, Mass.
Zaco Laboratories, Cleveland, O. (spray units)

ENCLOSURES FOR PERIMETER AIR CONDITIONING SYSTEMS AND AIR CONDITIONING UNITS

Brandt Corp., The, Long Island City, N. Y.
Knapp Bros Mfg. Co., Cincinnati, O.
Met-L-Wood Corp., Chicago, Ill.
Robertson Co., H. H., Pittsburgh, Pa.
Somers Corp., Detroit, Mich.
Sterling Radiators Co., Inc., Westfield, Mass.

ENCLOSURES, RADIATOR

Brandt Corp., The, Long Island City, N. Y.
Diamond Mfg. Co., Wyoming, Pa.
Hendrick Mfg. Co., Carbondale, Pa.
Hoff Mfg. Co., Bethany, New Haven, Conn.
Knapp Bros. Mfg. Co., Cincinnati, O. (also for convectors)
Met-L-Wood Corp., Chicago, Ill.
Somers Corp., Detroit, Mich.
Stedco Products, Wilkes-Barre, Pa.
Sterling Radiators Co., Inc., Westfield, Mass.
United Sheet Metal Co., Inc., Columbus, O.

ENGINES, DIESEL, FOR FAN, PUMP AND COMPRESSOR DRIVES

Alco Products, Inc., Schenectady, N. Y.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Anderson Diesel Engine Co., Philadelphia, Pa.
Berry-Hill Corp., Hill Diesel Engine Div., Providence, R. I.
Caterpillar Tractor Co., Engine Div., Peoria, Ill.
Chicago Pneumatic Tool Co., New York, N. Y.
Cooper-Bessemer Corp., The, Mt. Vernon, O.
Detroit Diesel Engine Div., General Motors Corp., Detroit, Mich.
Engine & Material Handling Div., Allis-Chalmers Mfg. Co., Harvey, Ill.
Fairbanks, Morse & Co., Chicago, Ill.
Hamilton Div., Baldwin-Lima-Hamilton Corp., Hamilton, O.
Ingersoll-Rand Co., New York, N. Y.
Onan & Sons Inc., D. W., Minneapolis, Minn.
Synchro-Start Products, Inc., Skokie, Ill. (automatic controls to start, stop and protect internal combustion engines)
Waukesha Motors Co., Waukesha, Wis.
Worthington Corp., Harrison, N. J.

ENGINES, GAS, FOR FAN, PUMP AND COMPRESSOR DRIVES

Caterpillar Tractor Co., Engine Div., Peoria, Ill. (natural gas)
Chicago Pneumatic Tool Co., New York, N. Y.
Cooper-Bessemer Corp., The, Mt. Vernon, O.
Engine & Material Handling Div., Allis-Chalmers Mfg. Co., Harvey, Ill.
Fairbanks, Morse & Co., Chicago, Ill.
I.C.E.D., Inc., St. Petersburg, Fla.
Ingersoll-Rand Co., New York, N. Y.
Onan & Sons Inc., D. W., Minneapolis, Minn.
Pratt & Whitney Aircraft Div., United Aircraft Corp., E. Hartford, Conn.
Synchro-Start Products, Inc., Skokie, Ill. (automatic controls to start, stop and protect internal combustion engines)
Waukesha Motor Co., Waukesha, Wis.
Worthington Corp., Harrison, N. J.

ENGINES, STEAM, FOR FAN, PUMP AND COMPRESSOR DRIVES

Skinner Engine Co., Erie, Pa.
Wachs Co., E. H., The, Chicago, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa.

EQUIPMENT, BALANCING

Bear Mfg. Co., Industrial Div., Rock Island, Ill. (dynamic and static)
Gisholt Machine Co., Madison, Wis.
Industrial Balancing Engineers Div., Calkins Machine & Tool Works, East Aurora, N. Y.
Olsen Testing Machine Co., Tinius, Willow Grove, Pa.

EQUIPMENT INSULATION

See Insulation, Boiler, Tank, and Equipment

EQUIPMENT, RADIOGRAPHIC INSPECTION

Branson Instruments, Inc., Stamford, Conn.
General Electric Co., X-Ray Dept., Milwaukee, Wis.
Nuclear Systems, A Div. of the Budd Co., Philadelphia, Pa.

EQUIPMENT, ULTRASONIC TESTING

American Time Products, Inc., Woodside, N. Y. (cleaning)
Branson Instruments, Inc., Stamford, Conn.
Superior Valve & Fittings Co., Pittsburgh, Pa.

EVAPORATIVE CONDENSERS

See Condensers, Refrigerating, Evaporative

EVAPORATIVE COOLERS

See Unitary Air Conditioners, Summer, Evaporative Cooling Type

EVAPORATORS

See Chillers, Water

EXCHANGERS, HEAT, FOR AIR TO AIR HEAT RECOVERY

See Units, Heat Recovery, Air to Air

EXCHANGERS, HEAT, SHELL AND TUBE

Acme Industries, Inc., Jackson, Mich.
Adams Co., Inc., R. P., Buffalo, N. Y. (liquid to gas)
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Alco Products, Inc., Schenectady, N. Y.
Alstrom Corp., New York, N. Y.
Aluminum Co. of America, Pittsburgh, Pa.
American-Standard Industrial Div., Detroit, Mich.
American Tube & Controls, Inc., West Warwick, R. I.
Armstrong Co., Richard M., West Chester, Pa.
Bell & Gossett Co., Morton Grove, Ill.
Beltran Associates, Inc., Brooklyn, N. Y.
Berlin Chapman Co., Berlin, Wis.
Bernstrom, Inc., C. R., Providence, R. I.
Biggs Boiler Wks. Co., The, E. Akron, O.
Birchfield Boiler, Inc., Tacoma, Wash.
Blaw Knox Co., Buflovak Equipment Div., Buffalo, N. Y.
Brown Fintube Co., Elyria, O.
Buxton Mfg Co., Dover, N. J.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Cleaver-Brooks Co., Milwaukee, Wis.
Cochrane Corp., Philadelphia, Pa.
Condenser Service & Engineering Co., Inc., Hoboken, N. Y.
Cooley Co., E. C., San Francisco, Calif.
Corning Glass Works, Corning, N. Y.
Croll-Reynolds Engineering Co., Inc., Stamford, Conn.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dean Products Inc., Brooklyn, N. Y.
Degree Corp., Kansas City, Kans.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Dowingtown, Pa.
Doyle & Roth Mfg. Co., Inc., Brooklyn.
Dunham-Bush, Inc., West Hartford, Conn.
Duriron Co., The, Dayton, O. (corrosion resisting)
Esco Corp., Portland, Ore.
Ellicott Fabricators, Inc., Baltimore, Md.
Foster Wheeler Corp., New York, N. Y.
Frick Co., Waynesboro, Pa.
Gabriel Boiler Co., Portland, Ore.
General Fittings Co., East Greenwich, R. I.
Gilbert Brass Foundry Co., St. Louis, Mo.
Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Griscom-Russell Co., The, Massillon, O.
Haveg Industries, Inc., Wilmington, Del. (plastic)
Heat-Exchangers, Inc., Chicago, Ill.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Heatron, Inc., York, Pa.
Heil Process Equipment Corp., Cleveland, O.
Industrial Filter & Pump Co., Cicero, Ill.
Industrial Products Div., Perfex Corp., Milwaukee, Wis.
Kaiser Co., E. B., Glenview, Ill.
Killebrew Engineering Corp., St. Louis, Mo.
Knapp Mills, Inc., Long Island City, N.Y.
Kopperman & Sons, Inc., Joseph, Philadelphia, Pa.
Lindy Heaters, Inc., Bronx, N. Y.
Madden Corp., The, Chicago, Ill.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis.
Manning & Lewis Engineering Co., Union, N. J.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Mueller Brass Co., Port Huron, Mich.
National Carbon Co., A Div. of Union Carbide Corp., New York, N. Y.
National Pipe Bending Co., New Haven, Conn.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Nooter Corp., St. Louis, Mo.
Old Dominion Iron & Steel Corp., Richmond, Va.
Olin Mathieson Chemical Corp., Metals Div., East Alton, Ill. (roll bond panels incorporating fluid passages)
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Process Engineering, Inc., Methuen, Mass.
Reco Products Div., Recony Corp., New York, N. Y.
Richmond Engineering Co., Richmond, Va.
Rite Engineering & Mfg. Corp., Downey, Calif.
Roessing Mfg. Co., Pittsburgh, Pa.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Shutt Process Equipment Corp., St. Louis, Mo.
Sims Co., Erie, Pa.
Solar Aircraft Co., San Diego, Calif.
Standard-Thompson Corp., Waltham, Mass.
Stickle Steam Specialties Co., Indianapolis, Ind.
Stout & Sons, David, St. Louis, Mo.
Struthers Wells Corp., Warren, Pa.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taco Heaters, Inc., Cranston, R. I.
Terre Haute Boiler Works Co., Terre Haute, Ind.
Texas Metal Fabricating Co., Houston, Tex.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, LaCrosse, Wis.
Tranter Mfg. Inc., Lansing, Mich.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Vapor Heating Corp., Chicago, Ill.
Vic Mfg. Co., Minneapolis, Minn.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Water Tube Boiler & Tank Co., Chicago, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.
Whitlock Mfg. Co., W. Hartford, Conn.
Wilson Engineering Corp., Chicago, Ill.
Worthington Corp., Harrison, N. J.
Yates-American Machine Co., Heat Transfer Products Div., Beloit, Wis.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.
Yula Corp., Bronx, N. Y.

EXCHANGERS, HEAT, REFRIGERANT SUCTION LINE

Acme Industries, Inc., Jackson, Mich.
Armstrong Co., Richard M., West Chester, Pa.
Blazer Corp., Passaic, N. J.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dean Products, Inc., Brooklyn, N. Y.
Dole Refrigerating Co., Chicago, Ill.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
Frick Co., Waynesboro, Pa.
Frigid Coil, Inc., El Monte, Calif.
Heat-Exchangers, Inc., Chicago, Ill.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Heatron, Inc., York, Pa.
Howe Ice Machine Co., Chicago, Ill.
Kaiser Co., E. B., Glenview, Ill.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Marlo Coil Co., St. Louis, Mo.
Mueller Brass Co., Port Huron, Mich.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Reco Products Div., Recony Corp., New York, N. Y.
Refrigeration Research, Inc., Brighton, Mich.
Rempe Co., Chicago, Ill.
Super Radiator Corp., Minneapolis, Minn.
Superior Valve and Fittings Co., Pittsburgh.
Trane Co., The, La Crosse, Wis.
Tranter Mfg. Inc., Lansing, Mich.
Vilter Mfg. Co., The, Milwaukee, Wis.
Water Tube Boiler & Tank Co., Chicago, Ill.
Witt Co., A. H., Los Angeles, Calif.
Worthington Corp., Harrison, N. J.

EXHAUST HEADS

See Heads, Exhaust, for Pipe Lines

EXHAUST VENTILATION FITTINGS

See Fittings, Exhaust, Garage, for Attaching Car Exhaust Pipe

EXHAUSTERS

See Units, Exhauster, Centrifugal Fan

EXHAUSTERS, WELDING FUME

Airfan Engineering Co., Los Angeles, Calif.
Aladdin Heating Corp., San Leandro, Calif.
Allen Cooler & Ventilator, Inc., Rochester, Mich.
Allington & Curtis Mfg. Co., Saginaw, Mich.
American Machine Products Co., Marshalltown, Ia.
American-Standard Industrial Div., Detroit.
Ammerman Co., Inc., Stillwater, Minn.
Barry Blower Co., Minneapolis, Minn.
Bertram Co., Harvey P., The, Cincinnati, O.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Blower Corp., Franklin Park, Ill.
Coppus Engineering Corp., Worcester, Mass.
Dana Fan & Blower Corp., Cincinnati, O.
Day Co., The, Minneapolis, Minn.

DeVilbiss Metal Fabricators Co. Detroit, Mich.
Emerson Electric Mfg. Co., The, St. Louis.
Engwald Corp., The, Inwood, Long Island, N. Y.
Gallaher Co., The, Omaha, Neb.
General Blower Co., Subsid. Ilg Electric Ventilating Co., Morton Grove, Ill.
Jenn-Air Products Co., Indianapolis, Ind.
Kirk & Blum Mfg. Co., Cincinnati, O.
Kody Blower Co., Trenton, N. J.
M & E Mfg. Co., Indianapolis, Ind.
Martin Fan & Blower Co., Chicago, Ill.
Mine Safety Appliances Co., Pittsburgh, Pa.
National System of Garage Ventilation, Inc., Decatur, Ill.
Quickdraft Corp., Canton, O.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Ruemelin Mfg. Co., Milwaukee, Wis.
Torit Mfg. Co., St. Paul, Minn.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

EXPANDERS, TUBE

Airetool Mfg. Co., Springfield, O.
Burr Oak Tool & Gauge Co., Sturgis, Mich.
Chicago Pneumatic Tool Co., New York, N. Y.
Crane Packing Co., Morton Grove, Ill.
Elliott Co., Jeannette, Pa.
Henderer's Sons, A. L., Wilmington, Del.
Hill, Inc., Walter P., Detroit, Mich.
Talon Tools, Inc., North Arlington, N. J.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Vernon Tool Co., Ltd., Alhambra, Calif.
Wiedeke Co., The Gustav, Dayton, O.
Wilson, Inc., Thomas C., Long Island City, N. Y.

EXPANSION BENDS

See Bends, Expansion

EXPANSION BOLTS

See Bolts, Expansion

EXPANSION JOINTS

See Joints, Pipe Expansion

EXPANSION TANKS

See Tanks, Expansion, for Hot Water Heating Systems

EXPANSION VALVES

See Valves, Refrigeration

EXTENSIONS, FURNACE, WATER WALL, FOR BOILERS

Crotty Mfg. Corp., Flushing, L. I., N. Y.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.

EXTRACTORS, PIPE

Anderson & Grunsky, Santa Cruz, Calif.
Chicago Specialty Mfg. Co., Chicago, Ill.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Ridge Tool Co., Elyria. O.
Roddick Tool Co., Anaheim, Calif.
Snap-on Tools Corp., Kenosha, Wis.
Talon Tools, Inc., North Arlington, N. J. (internal wrenches)
Walton Co., Hartford, Conn.

FABRICATED PIPING

See Bends; Headers; etc.

FABRICATORS, PIPE

See Headers, Pipe, Welded; and Coils, Pipe

FAN BALANCING EQUIPMENT

See Equipment, Balancing

FAN BASES

See Bases, Vibration Isolating, Pad Type, and Bases, Vibration Isolating, Spring Type

FAN BLADES

See Blades, Propeller Fan

FAN-COIL UNITS

See Unitary Air Conditioners, Year Around, Fan-Coil Type

FAN CONTROLS

See Controls, Fan

FAN HOUSINGS

See Housing, Fan, Centrifugal

FANS, AXIAL FLOW, PRESSURE TYPE

Acme Engineering & Mfg. Corp., Muskogee, Okla. (tubeaxial)
Aerovent Fan Co., Inc., Piqua, O. (Tubeaxial and vaneaxial)
Alloy Propeller, Zelionople, Pa. (Tubeaxial)
American-Standard Industrial Div., Detroit, Mich. (tubeaxial and vaneaxial)
Bahnson Co., Winston-Salem, N. C. (Vaneaxial)
Benson Mfg. Co., Kansas City, Mo. (vaneaxial)
Bertram Co., Harvey P., The, Cincinnati, O.
Buffalo Forge Co., Buffalo, N. Y.
Chelsea Fan & Blower Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Chicago Blower Corp., Franklin Park, Ill. (tubeaxial and vaneaxial)
Cincinnati Fan & Ventilating Co., Cincinnati, O. (tubeaxial)
De Bothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.
Dynamic Air Engineering, Inc., Los Angeles, Calif. (tubeaxial and vaneaxial)
Electric Boat Co., Groton, Conn. (vaneaxial)
Hamilton Fan & Blower Co., Inc., Cincinnati, O. (tubeaxial)
Hartzell Propeller Fan Co., Piqua, O. (tubeaxial and vaneaxial)
Ilg Electric Ventilating Co., Chicago, Ill. (tubeaxial)
Industrial Plastic Fabricators, Norwood, Mass. (PVC) (tubeaxial)
International Engineering Inc., Dayton, O.
Joy Mfg. Co., Pittsburgh, Pa. (vaneaxial)
Kody Blower Co., Trenton, N. J. (tubeaxial and vaneaxial)
Lennox Industries Inc., Des Moines, Ia. (tubeaxial and vaneaxial)
Lennox Industries Inc., Marshalltown, Ia. (vaneaxial)
M & E Mfg. Co., Indianapolis, Ind. (tubeaxial)
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif. (tubeaxial & vaneaxial)
Moore Co., The, Marceline, Mo. (vaneaxial)
Penn Ventilator Co., Philadelphia, Pa. (tubeaxial)
Pesco Products Div., Borg-Warner Corp., Bedford, O.
Plant Engineering & Equipment Co., Elizabeth, N. J.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Propellair Div., Robbins & Myers, Inc., Springfield, O. (tubeaxial and vaneaxial)
Reed Unit-Fans, Inc., New Orleans, La. (tubeaxial)
Robinson Ventilating Co., Zelienople, Pa. (tubeaxial)
South Bend Air Products, Inc., South Bend, Ind. (tubeaxial and vaneaxial)
Stanat Mfg. Co., Inc., Westbury, N. Y. (vaneaxial—2 to 6 in. diameter)
Standard Electric Mfg. Co., West Berlin, N. J. (tubeaxial)
Trade-Wind Div., Robbins & Myers, Inc., Pico Rivera, Calif.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J. (vaneaxial & tubeaxial)

FANS, CENTRIFUGAL

Air Conditioning Engineering Co., Cambridge, Mass.
Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland, O.
Air Motion Research Div., Missile Dynamics Corp., Lynwood, Calif.
Airfan Engineering Co., Los Angeles, Calif.
Aladdin Heating Corp., San Leandro, Calif.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Alloy Propeller, Zelionople, Pa. (Stainless Steel)
American Agile Corp., Bedford, O.
American Foundry & Furnace Co., Bloomington, Ill.
American Machine Products Co., Marshalltown, Ia.
American-Standard Industrial Div., Detroit, Mich.
Ammerman Co., Inc., Stillwater, Minn.
Barry Blower Co., Minneapolis, Minn.
Bayley Blower Co., A Div. of the Green Fuel Economizer Co., Inc., Milwaukee, Wis. (backward curve and forward curve)
Bronson Fan Mfg. Corp., Los Angeles, Calif.
Brundage Co., The, Kalamazoo, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Burdett Mfg. Co., Chicago, Ill.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Cardwell Machine Co., Richmond, Va.
Carling Turbine Blower Co., Worcester, Mass.
Carolina Blower Co., Inc., Greensboro, N. C. (shaving exhauster)
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Fan & Ventilating Co., Cincinnati, O.
Clarage Fan Co., Kalamazoo, Mich.
Commercialaire Corp. of America, Brooklyn, N. Y.
Cook Co., Loren, Berea, O.
Coppus Engineering Corp., Worcester, Mass.
Day Co., The, Minneapolis, Minn.
Dayton Electric Mfg. Co., Chicago, Ill.
Donaldson Power Ventilator Co., Los Angeles, Calif.
Dryer Dynamics Corp., Lyndhurst, N. J.
Duriron Co., Inc., Dayton, O. (Acid resisting)
DuVerre, Inc., Buffalo, N. Y. (plastic)
Dynamic Air Engineering, Inc., Los Angeles, Calif.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Engwald Corp., The, Inwood, Long Island, N. Y.
Fasco Industries, Inc., Rochester, N. Y.
Fedders Corp., Buffalo, N. Y.
Frigid, Inc., Brooklyn, N. Y.
Gaffers & Sattler, Los Angeles, Calif.
Gallaher Co., The, Omaha, Neb.
Garden City Fan & Blower Co., Niles, Mich.
General Blower Co., Subsid. Ilg Electric Ventilating Co., Morton Grove, Ill.
General Blower Co., Philadelphia, Pa.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (ceramics, plastic)
Green Fuel Economizer Co., Inc., The, Beacon, N. Y.
Hamilton Fan & Blower Co., Inc., Cincinnati, O.
Hartzell Propeller Fan Co., Piqua, O.
Heil Process Equipment Corp., Cleveland, O. (plastic and coated solid plastic, and rubber lined)
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Ilg Electric Ventilating Co., Chicago, Ill.
IMC Magnetics Corp., Westbury, Long Island, N. Y.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Jackson & Church Co., Saginaw, Mich.
Jamieson Mfg. Co., Dallas, Tex.
Jan-Air, Inc., Richmond, Ill.
Jeffrey Mfg. Co., Columbus, O.
Jenn-Air Products Co., Indianapolis, Ind.
Joy Mfg. Co., Pittsburgh, Pa.
Kice Metal Products Co., Wichita, Kans.
Lau Blower Co., Dayton, O.
Lehigh Fan & Blower Div., Fuller Co., Catasauqua, Pa.
Lennox Industries Inc., Marshalltown, Ia.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
Marlo Coil Co., St. Louis, Mo.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
Milo Mfg. Co., Elizabeth, N. J. (plastic)
Morrison Products, Inc., Cleveland, O.
Mountain States Equipment Co., Denver, Colo.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
New York Blower Co., Chicago, Ill.
Newcomb-Detroit Co., Detroit, Mich.
Niagara Blower Co., New York, N. Y.
Northern Blower Co., Cleveland, O.
Phelps Fan Mfg. Co., Little Rock, Ark.
Plant Engineering & Equipment Co., Elizabeth, N. J.

Porter Co., Inc., H. K., Peerless Electric Div., Warren, O.
Power Engineering Corp., Mingo Jct., O.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Propellair Div., Robbins & Myers, Inc., Springfield, O.
R & R Metal Products, Inc., Chicago, Ill.
Redmond Co., Inc., Owosso, Mich.
Reliable Products Mfg. Co., Inc., Brooklyn.
Reynolds Mfg. Co., The, Comstock Park, Mich.
Revcor Inc., Carpentersville, Ill.
Ripley Co., Inc., Middletown, Conn. (for cooling aircraft and electronic equipment)
Robinson Ventilating Co., Zelienople, Pa.
Small Motors, Inc., Chicago, Ill. (small sizes)
Steam-O-Matic Corp., Sedalia, Mo.
Sutton Mfg. Co., Norfolk, Va.
Torrington Mfg. Co., The, Torrington, Conn.
Trane Co., The, LaCrosse, Wis.
Tuck-Aire Furnace Co., San Francisco, Calif.
U.S. Air Conditioning Corp., Delaware, O.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Viking Air Products, Div. of the Lau Blower Co., Cleveland, O.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

FANS, MATERIALS HANDLING

Air Conditioning Engineering Co., Cambridge, Mass.
Airfan Engineering Co., Los Angeles, Calif.
Aladdin Heating Corp., San Leandro, Calif.
Allington & Curtis Mfg. Co., Saginaw, Mich.
American-Standard Industrial Div., Detroit, Mich.
Barry Blower Co., Minneapolis, Minn.
Bayley Blower Co., A Div. of the Green Fuel Economizer Co., Inc., Milwaukee, Wis. (backward curve and forward curve)
Buffalo Forge Co., Buffalo, N. Y.
Cardwell Machine Co., Richmond, Va.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Fan & Ventilating Co., Cincinnati, O.
Clarage Fan Co., Kalamazoo, Mich.
Day Co., The, Minneapolis, Minn.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Garden City Fan & Blower Co., Niles, Mich.
General Blower Co., Subsid. Ilg Electric Ventilating Co., Morton Grove, Ill.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Ilg Electric Ventilating Co., Chicago, Ill.
Kice Metal Products Co., Wichita, Kans.
Kody Blower Co., Trenton, N. J.
Lehigh Fan & Blower Div., Fuller Co., Catasauqua, Pa.
Lennox Industries Inc., Des Moines, Ia.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
Mountain States Equipment Co., Denver, Colo.
Newcomb-Detroit Co., Detroit, Mich.
New York Blower Co., Chicago Ill.
Phelps Fan Mfg. Co., Little Rock, Ark.
Porter Co., Inc., H. K., Peerless Electric Div., Warren, O.
Power Engineering Corp., Mingo Jct., O.
Propellair Div., Robbins & Myers, Inc., Springfield, O.
Quickdraft Corp., Canton, O.
Robinson Ventilating Co., Zelienople, Pa.
Sprout, Waldron & Co., Inc., Muncy, Pa.

FANS, MECHANICAL DRAFT, FOR BOILERS

Allen Cooler & Ventilator, Inc., Rochester, Mich.
American-Standard Industrial Div., Detroit, Mich.
Ammerman Co., Inc., Stillwater, Minn.
Barry Blower Co., Minneapolis, Minn.
Bayley Blower Co., A Div. of the Green Fuel Economizer Co., Inc., Milwaukee, Wis. (backward curve and forward curve)
Bertram Co., Harvey P., The, Cincinnati. O.
Bressler Engineering Service, Oregon, Ill.
Buffalo Forge Co., Buffalo, N. Y.
Campbell Co., E. K., Kansas City, Mo.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Fan & Ventilating Co., Cincinnati, O.
Clarage Fan Co., Kalamazoo, Mich.
De Bothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.
Dryer Dynamics Corp., Lyndhurst, N. J.
Gallaher Co., The, Omaha, Neb.
Garden City Fan & Blower Co., Niles, Mich.
General Blower Co., Subsid. Ilg Electric Ventilating Co., Morton Grove, Ill.
General Blower Co., Philadelphia, Pa.
Green Fuel Economizer Co., Inc., The, Beacon, N. Y.
Ilg Electric Ventilating Co., Chicago, Ill.
International Engineering, Inc., Dayton, O.
Kody Blower Co., Trenton, N. J.
Kol-Master Corp., Oregon, Ill.
Lehigh Fan & Blower Div., Fuller Co., Catasauqua, Pa. (induced)
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles. Calif.
McLarty Systems, Battle Creek, Mich.
OverHead Heaters, Inc., Detroit, Mich.
Pacific Steel Boiler Div., Crane Co., Johnstown, Pa.
Plant Engineering & Equipment Co., Elizabeth, N. J.
Plant Equipment Div., General Blower Co., Inc., Philadelphia, Pa.
Power Engineering Corp., Mingo Jct., O.
Quickdraft Co., Canton, O.
Reliable Products Mfg. Co., Inc., Brooklyn, N. Y.
Robinson Ventilating Co., Zelienople, Pa.
Tjernlund Mfg. Co., St. Paul, Minn.
Walker Mfg. & Sales Co., St. Joseph, Mo.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Whitty Co., Inc., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

FANS, PROPELLER

Acme Engineering & Mfg. Corp., Muskogee, Okla.
Aerovent Fan Co., Inc., Piqua, O.
Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland O.
Aire-Foile Fan & Blower Co., Detroit, Mich.
Airmaster Corp., Chicago, Ill.
Airserco Mfg. Co., Inc., Pittsburgh, Pa.
Airtron Corp., Div. of the Higgins Metal Products Co., Swanton, O.
Allen Cooler & Ventilator, Inc., Rochester, Mich.
Alloy Propeller, Zelienople, Pa. (Stainless Steel)
American Coolair Corp., Jacksonville, Fla.
American-Standard Industrial Div., Detroit, Mich.
Ammerman Co., Inc., Stillwater, Minn.
Bar-Brook Mfg. Co., Inc., Shreveport, La.
Belco Industries, Inc., St. Louis, Mo.
Bertram Co., Harvey P., The, Cincinnati, O.
Broan Mfg. Co., Inc., Hartford, Wis.
Bronson Fan Mfg. Corp., Los Angeles, Calif.
Buffalo Forge Co., Buffalo, N. Y.
Burden Co., Alan E., Los Angeles, Calif.
C & H Air Conditioning Fan Co., Inc., Atlanta, Ga.
Carey Mfg. Co., Philip, Cincinnati, O.
Car-Mon Products, Inc., Chicago, Ill.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Fan & Ventilating Co., Cincinnati, O.
Clarage Fan Co., Kalamazoo, Mich.
Commercialaire Corp. of America, Brooklyn, N. Y.
Consolidated General Products, Inc., Houston, Tex.
Cook Co., Loren, Berea, O.
Coppus Engineering Corp., Worcester, Mass.
Dayton Electric Mfg. Co., Chicago, Ill.
De Bothezat Fans Div., American Machines and Metals, Inc., New York, N. Y.
Degree Corp., Kansas City, Kans.
DeVilbiss Co., The, Toledo, O.
Donaldson Power Ventilator Co., Los Angeles, Calif.
Dynamic Air Engineering, Inc., Los Angeles.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Fasco Industries, Inc., Rochester, N. Y.
Fresh'nd-Aire Co., Div. of Cory Corp., Chicago, Ill.
Frigid, Inc., Brooklyn, N. Y.
Gallaher Co., The. Omaha, Nebr.
Hamilton Fan & Blower Co., Inc., Cincinnati, O.
Hartzell Propeller Fan Co., Piqua, O.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
IMC Magnetics Corp., Westbury, Long Island, N. Y.
International Engineering, Inc., Dayton, O.
Jamieson Mfg. Co., Dallas, Tex.
Jeffrey Mfg. Co., Columbus, O.
Jenn-Air Products Co., Indianapolis, Ind.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Kody Blower Co., Trenton. N. J.
Koppers Company, Inc., Metal Products Div., Baltimore. Md.
Lakewood Engineering & Mfg. Co., Chicago, Ill.
Lau Blower Co., Dayton. O.
Lennox Industries Inc., Des Moines, Ia.
M & E Mfg. Co., Indianapolis, Ind.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
Main Cornice Works, Inc., Los Angeles, Calif.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
McLarty Systems, Battle Creek, Mich.
Meier Electric, Indianapolis, Ind.
Moore Co., The, Marceline, Mo.
Morrill Motors, Ft. Wayne, Ind.
Mountain States Equipment Co., Denver.
Muckle Mfg. Co., Owatonna, Minn.
National Gas Equipment Co., Inc., Denison, Tex.
New York Blower Co., Chicago, Ill.
Norky Mfg. Co., Covington, Ky.
Palmer Fan Div., Palmer Engineering Co., W. DePere, Wis.
Perkins & Son, Inc., B. F., Holyoke, Mass.
Phelps Fan Mfg. Co., Little Rock, Ark.
Plant Engineering & Equipment Co., Elizabeth, N. J.
Porter Co., Inc., H. K., Peerless Electric Co., Warren, O.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Precision Fan Blade Mfg. Co., Div. of Warrington Co., Los Angeles, Calif.
Propellair Div., Robbins & Myers, Inc., Springfield, O.
Reed Unit-Fans, Inc., New Orleans, La.
Revcor, Inc., Carpentersville, Ill.
Reynolds Electric Co., River Grove, Ill.
Robinson Ventilating Co., Zelienople, Pa.
Romla Co., Los Angeles, Calif.
Schwitzer Corp., Indianapolis, Ind.
South Bend Air Products, Inc., South Bend, Ind.
Standard Electric Mfg. Co., West Berlin, N. J.
Steam-O-Matic Corp., Sedalia, Mo.
Swift Mfg. Co., Inc., Detroit, Mich.
Torrington Mfg. Co., The, Torrington, Conn.
Trane Co., The, LaCrosse, Wis.
Truflo Fan Co., Harmony, Pa.
Vornado, Inc., Garfield, N. J.
Western Blower Co., Seattle, Wash.
Western Engineering & Mfg. Co., Los Angeles, Calif.
Westinghouse Electric Corp., Electric Appliance Divisions, Columbus, O.
Westinghouse Electric Corp., Sturtevant Div., Hyde Park, Boston, Mass.
Whirlwind Mfg. Co., Houston, Tex.
Wind-Way Fan & Ventilating Co., New Orleans, La.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

FASTENERS, HAMMER DRIVEN

Bostitch, Inc., East Greenwich, R. I.
Diamond Expansion Bolt Co., Inc., Garwood, N. J.
Fastway Fasteners, Inc., Lorain, O.
Hilti, Inc., Rapid Fastening Systems, Stamford, Conn.
Huck Mfg. Co., Detroit, Mich.
U. S. Expansion Bolt Co., York, Pa.

FASTENERS, INSULATION

Acme Steel Co., Chicago, Ill (steel strapping)
Bostitch Inc., East Greenwich, R. I.
Bulldog Div., Gregory Industries, Inc., Lorain, O.
Carr Fastener Co., Div. of United Carr Fastener Corp., Cambridge, Mass.
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y.
Duro-Dyne Corp., Farmingdale, L.I., N. Y.
Gerrard & Co., A. J., Des Plaines, Ill.
Hilti, Inc., Rapid Fastening Systems, Stamford, Conn.
Holub Industries, Inc., Sycamore, Ill.
KSM Products, Inc., Moorestown, N. J.
Lexsuco, Inc., Solon, O.
Minnesota Mining & Mfg. Co., Adhesives, Coatings & Sealers Div., St. Paul, Minn.
Miracle Adhesives Corp., Bellmore, N. Y.
Moore, Inc., Goodloe E., Danville, Ill.
Omark Industries, Inc., Portland, Ore.
Phillips Drill Co., Michigan City, Ind.
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., New Haven, Conn. (powder-actuated)
Remington Arms Co., Inc., Bridgeport, Conn.
Shakeproof Div., Illinois Tool Wks., Elgin, Ill.
Stic-Klip Mfg. Co., Inc., Cambridge, Mass.
Taft-Jenkins Co., Inc., Holyoke, Mass.
Tinnerman Corp., George A., Cleveland, O.

FASTENERS, POWDER OPERATED

Ammo Products, Inc., Washington, D. C.
Columbiamatic "8" Corp., The, Syracuse, N. Y.
du Pont de Nemours & Co., E. I., Wilmington, Del. (chemical expansion blind rivets)
Hilti, Inc., Rapid Fastening Systems, Stamford, Conn.
KSM Products, Inc., Moorestown, N. J.
Omark Industries, Inc., Portland, Ore.
Mine Safety Appliances Co., Velocity Power Tool Dept., Pittsburgh, Pa.
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., New Haven, Conn.
Remington Arms Co., Inc., Bridgeport, Conn.
Tempo Products Co., Cleveland, O.

FEEDERS, CHEMICAL, PROPORTIONING

American Meter Co., Pump Div., Philadelphia, Pa.
American Water Softener Co., Philadelphia, Pa.
Belco Industrial Equipment Div., Bogue Electric Mfg. Co., Paterson, N. J.
B-I-F Industries, Inc., Omega Div., Providence, R. I. (liquid & dry)
B-I-F Industries, Inc., Proportioneers Div., Providence, R. I.
Bruner Corp., Milwaukee, Wis.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Clayton Mark & Co., Evanston, Ill.
Cochrane Corp., Philadelphia, Pa.
Dearborn Chemical Co., Chicago, Ill.
Elgin Softener Corp., Elgin, Ill.
Erlen Products Co., Burbank, Calif.
Fischer & Porter Co., Warminster, Pa.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hills-McCanna Co., Chicago, Ill.
Hungerford & Terry, Inc., Clayton, N. J.
Infilco, Inc., Tucson, Ariz.
Jeffrey Mfg. Co., Columbus, O.
Lapp Insulator Co., LeRoy, N. Y.
Mader Machine Co., Lorain, O.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
Myers & Bros. Co., F. E., The, Ashland, O.
Norcross Co., Sterling E., Bloomfield, N. J.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York N. Y.
Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Summit, N. J.
Research Appliance Co., Allison Park, Pa.
Reynolds Water Conditioning Co., Detroit, Mich.
Smith Chemical Co., E. W., La Puente, Calif.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Stiles Karlsonite Corp., Waukegan, Ill.
Wallace & Tiernan, Inc., Belleville, N. J.

FEEDERS, WATER, HEATING BOILER

Acker Corp., Meridian, Miss.
Bailey Co., Chas. M., San Francisco, Calif.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Campbell Co., J. A., Long Beach, Calif.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
H T Boiler Feeder Co., Phoenixville, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Magnetrol, Inc., Chicago, Ill.
Maid-O'-Mist, Inc., Chicago, Ill.
McAlear Mfg. Co., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Morehead Moisture Control, Detroit, Mich.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Smith Chemical Co., E. W., La Puente, Calif.
Squires Co., C. E., The, Cleveland, O.
Watts Regulator Co., Lawrence, Mass.

FEEDWATER HEATERS

See Deaerators

FIBERS FOR AIR FILTERS

American Felt Co., Glenville, Conn.
American Viscose Corp., New York, N. Y.
Armour Industries, Alliance, O.
Celanese Corp. of America, Charlotte, N. C.
Chicopee Mills, Inc., New York, N. Y.
Eastman Chemical Products, Inc., Subsid., Eastman Kodak Co., Kingsport, Tenn.
Microtron Corp., Charlotte, N. C.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Plummer Mfg. Co., W. A., Los Angeles, Calif.
Reihhold Chemicals, Inc., White Plains, N. Y.
Scott Paper Co., Foam Div., Chester, Pa.
Union Carbide Development Co., Div. of Union Carbide Corp., New York, N. Y.

FIBER PACKING

See Packing, Fiber

FIBER PIPE

See Pipe, Fiber

FILTER AIR FIBERS

See Fibers for Air Filters

FILTER FRAMES

See Frames for Holding Panel Type Air Filters

FILTER GAGES

See Gages, Air Filter

FILTER OILS

See Oils, for Coating Viscous Air Filters

FILTERS, AIR, AUTOMATIC, DRY

American Air Filter Co., Inc., Louisville, Ky.
Continental Air Filters, Inc., Louisville, Ky.
Day Co., The, Minneapolis, Minn.
Ducon Co., Inc., The, Mineola. N. Y.
Electro-Air Cleaner Co., Inc., McKees Rocks, Pa.
Farr Co., Los Angeles, Calif.
Flanders Filters, Inc., Riverhead, Long Island, N. Y.
Gray Co., Inc., Minneapolis, Minn.
Green Fuel Economizer Co., Inc., The, Beacon, N. Y.
Hanna Engineering Works, Chicago, Ill.
Microtron Corp., Charlotte, N. C.
Trion, Inc., McKees Rocks, Pa.
Wheelabrator Corp., Mishawaka, Ind.

FILTERS, AIR, AUTOMATIC, VISCOUS

Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
American Air Filter Co., Inc., Louisville, Ky.
Burnett, Jr., Inc., J. F., Rochester, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Continental Air Filters, Inc., Louisville, Ky.
Dollinger Corp., Rochester, N. Y.
Farr Co., Los Angeles, Calif.
Radex Corp., Chicago, Ill.

FILTERS, AIR, ELECTRICAL

See Filters, Air, Electrostatic (with outside power source)

FILTERS, AIR, ELECTROSTATIC

(with outside power source)

Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
Albion Div., McGraw-Edison Co., Albion, Mich.
American Air Filter Co., Inc., Louisville, Ky.
Dollinger Corp., Rochester N. Y.
Electro-air Cleaner Co., Inc., McKees Rocks, Pa.
Mamco Corp., Racine, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Radex Corp., Chicago, Ill.
Trion, Inc., McKees Rocks, Pa.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

FILTERS, AIR, GREASE

Specifically designed for kitchen exhaust systems

Air-Con Filter Corp., Memphis, Tenn.
Air Devices, Inc., New York, N. Y.
Air Filter Corp., Milwaukee, Wis.
Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
American Air Filter Co., Inc., Louisville, Ky.
Carey Electronic Engineering Co., Metal Wool Div., Springfield, O.
Continental Air Filters, Inc., Louisville, Ky.
Dollinger Corp., Rochester, N. Y.
Evans Corp., The George, Moline, Ill.
Farr Co., Los Angeles, Calif.
Morrison Products, Inc., Cleveland, O.
Research Products Corp., Madison, Wis.
Smith Filter Corp., Moline, Ill. (Aluminum)
Trion Inc., McKees Rocks, Pa.
Vortox Co., Claremont, Calif.

FILTERS, AIR, HIGH TEMPERATURE

(For use in filtering air at temperatures of 1000 F and above)

Cambridge Filter Corp., Syracuse, N.Y.
Farr Co., Los Angeles, Calif.
Flanders Filters, Inc., Riverhead, Long Island, N. Y.
Mine Safety Appliances Co., Pittsburgh, Pa.

FILTERS, AIR, MANUAL, DRY

American Air Filter Co., Inc., Louisville, Ky.
Continental Air Filters, Inc., Louisville, Ky.
Goodyear Tire & Rubber Co., Akron, O.
Lasco Industries, Montebello, Calif.

FILTERS, AIR, PANEL, DRY

Air-Con Filter Corp., Memphis, Tenn.
Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
American Air Filter Co., Inc., Louisville, Ky.
Arco Mfg. Co., New York, N. Y.
Buckeye Mfg., Inc., Columbus, O.
Cambridge Filter Corp., Syracuse, N. Y.
Carey Electronic Engineering Co., Metal Wool Div., Springfield, O.
Continental Air Filters, Inc., Louisville, Ky.
Coppus Engineering Corp., Worcester, Mass.
Dollinger Corp., Rochester, N. Y.
Drico Industrial Corp., Passaic, N. J.
Farr Co., Los Angeles, Calif.
Filt-R-Ite Co., Chicago, Ill.
Foamade Industries, Oak Park, Mich.
Fram Aire Corp., Div. of Fram Corp., Providence, R. I.
Goodyear Tire & Rubber Co., Akron, O.
Hadley Products Co., Inc., Marietta, O.
Master Products Co., Chicago, Ill.
Microtron Corp., Charlotte, N. C.
Peden Equipment Co., Houston, Texas
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Pollen Ex Co., Chicago, Ill.
Puritron Corp., New Haven, Conn.
Skuttle Mfg. Co., Milford, Mich.
Somers Corp., Detroit, Mich.
Trion, Inc., McKees Rocks, Pa.
Union Carbide Development Co., Div. of Union Carbide Corp., New York, N. Y.
Viking Air Products Div. of the Lau Blower Co., Cleveland, O.

FILTERS, AIR, PANEL, DRY, COMBINED WITH ACTIVATED CHARCOAL FOR ODOR CONTROL

Barnebey-Cheney Co., Columbus, O.
Cambridge Filter Corp., Syracuse, N. Y.
Flanders Filters, Inc., Riverhead, Long Island, N.Y.
Fram Aire Corp., Div. of Fram Corp., Providence, R. I.

FILTERS, AIR, PANEL, DRY, SUBMICRON PARTICULATE

American Air Filter Co., Inc., Louisville, Ky.
Cambridge Filter Co., Syracuse, N. Y.
Farr Co., Los Angeles, Calif.
Flanders Filters, Inc., Riverhead, Long Island, N.Y.
Mine Safety Appliances Co., Pittsburgh, Pa.

FILTERS, AIR, PANEL WITH PLASTIC MEDIA

Besser Furnace and Air Conditioning Corp., Charlotte, N. C.
Donie Engineering Sales, Inc., Indianapolis.
Duralast Products Corp., New Orleans, La.
Eaton Air Filter Co., Detroit, Mich.
Gelman Instrument Co., Chelsea, Mich.
Goodyear Tire & Rubber Co., Akron, O.
Hadley Products Co., Inc., Marietta, O.
Microtron Corp., Charlotte, N. C.
Permatron Corp., Chicago, Ill.
Plummer Mfg. Co., W. A., Los Angeles, Calif.
Skuttle Mfg. Co., Milford, Mich.
Stoddard Industries, Inc., Cudahy, Wis.
Union Carbide Development Co., Div. of Union Carbide Corp., New York, N. Y.

FILTERS, AIR, PANEL, VISCOUS

Air-Con Filter Corp., Memphis, Tenn.
Air Devices, Inc., New York, N. Y.
Air Filter Corp., Milwaukee, Wis.
Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
American Air Filter Co., Inc., Louisville.
Besser Furnace and Air Conditioning Corp., Charlotte, N.C.
Continental Air Filters, Inc., Louisville, Ky.
Dollinger Corp., Rochester, N. Y.
Drico Industrial Corp., Passaic, N. J.
Evans Corp., The George, Moline, Ill.
Farr Co., Los Angeles, Calif.
Research Products Corp., Madison, Wis.
Smith Filter Corp., Moline, Ill. (Aluminum)
Vortox Co., Claremont, Calif.
Wickford Products, Inc., Bronx, N. Y.

FILTERS, AIR, THROW-AWAY

Airgard Mfg. Co., Chicago, Ill.
American Air Filter Co., Inc., Louisville, Ky.
Arco Mfg. Co., New York, N. Y.
Burke & Co., Los Angeles, Calif.
C.L.B. Co., Houston, Tex.
Cambridge Filter Corp., Syracuse, N. Y. (replaceable cartridge)
Cuno Engineering Co., Meriden, Conn.
Drico Industrial Corp., Passaic, N. J.
Eaton Air Filter Co., Detroit, Mich.
Farr Co., Los Angeles, Calif.
Filt-R-Ite Co., Chicago, Ill.
Flanders Filters, Inc., Riverhead, Long Island, N. Y. (special purpose filters)
Fram Aire Corp., Div. of Fram Corp., Providence, R. I.
Kendall Co., The, Fiber Products Div., Walpole, Mass.
Microtron Corp., Charlotte, N. C.
Mine Safety Appliances Co., Pittsburgh, Pa.
Owens-Corning Fiberglas Corp., New York.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Plummer Mfg. Co., W. A., Los Angeles, Calif.
Pollen Ex Co., Chicago, Ill.
Technical Filter Co., Chicago, Ill.
Union Carbide Development Co., Div. of Union Carbide Corp., New York, N. Y.

FILTERS FOR OIL BURNERS

Andale Co., Philadelphia, Pa.
Anderson Brass Co., Detroit, Mich.
Barclay, Inc., Robert, Chicago, Ill.
Bendix Filter Div., Bendix Aviation Corp., Madison Heights, Mich.
Commercial Filters Corp., Melrose, Mass.
Cuno Engineering Corp., Meriden, Conn.
Delavan Mfg. Co., West Des Moines, Ia.
Eddington Metal Specialty Co., Eddington, Pa.
Eds-Wil Burner Corp., Chicago, Ill.
Fram Corp., Providence, R. I.
Fibrous Glass Products, Inc., A Subsid. of Pall Corp., Alpha Plaza, Hicksville, N. Y.
Filt-R-Ite Co., Chicago, Ill.
General Filters, Inc., Novi, Mich.
Hauck Mfg. Co., Brooklyn, N. Y.
Hilliard Corp., Elmira, N. Y.
Kraissl Co., Inc., The, Hackensack, N. J.
Marvel Engineering Co., Chicago, Ill.
McIntire Co., The, Livingston, N. J.
Morse-Smith-Morse Co., The, Watertown, Mass.
Newark Wire Cloth Co., Newark, N. J.
Norwood Products Co., Div. of A. R. Wood Mfg. Co., Luverne, Minn.
Pacific States Felt & Mfg. Co., San Francisco, Calif.
Purolator Products, Inc., Rahway, N. J.
Rega Mfg. Co., Rochester, N. Y.
Sette Products Co., Oakland, Calif.
Sparkler Mfg. Co., Conroe, Tex.
Unifilter Co., Novi, Mich.
W. G. B. Oil Clarifier, Inc., Kingston, N. Y.
Winslow Engineering & Mfg. Co., Oakland, Calif.
Wix Corp., Gastonia, N. C.
Wood Mfg. Co., A. R., Luverne, Minn.

FILTERS, ODOR

See Adsorbers, Odor, for Duct Systems

FILTERS, PIPE LINE

Adams Co., Inc., R. P., Buffalo, N. Y.
Airaterra (Roylyn Products), Glendale, Calif.
Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
American Air Filter Co., Inc., Louisville, Ky.
American Felt Co., Glenville, Conn.
American Meter Co., Inc., Philadelphia, Pa.
Andale Co., Philadelphia, Pa.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Automatic Switch Co., Florham Park, N. J.
Barnstead Still & Sterilizer Co., Boston, Mass.
Bendix Filter Div., Bendix Aviation Corp., Madison Heights, Mich.
Commercial Filters Corp., Melrose, Mass.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Croll-Reynolds Engineering Co., Inc., Stamford, Conn.
Cuno Engineering Corp., Meriden, Conn.
Delco Moraine Div., General Motors Corp., Dayton, O. (porous metal)
DeVilbiss Co., The, Toledo, O.
Dollinger Corp., Rochester, N. Y.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eddington Metal Specialty Co., Eddington, Pa.
Emco Pneumatic Corp., Des Moines, Ia.
Fibrous Glass Products, Inc., A Subsid. of Pall Corp., Alpha Plaza, Hicksville, N. Y.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
Fisher Governor Co., Marshalltown, Ia.
Fram Corp., Providence, R. I.
Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
General Filters, Inc., Novi, Mich.
Hankison Corp., Canonsburg, Pa.
Harman Equipment Co., Los Angeles, Calif.
Hilliard Corp., Elmira, N. Y.
Kaye & MacDonald, Inc., West Orange N. J.
Kraissl Co., Inc., The, Hackensack, N. J.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Marvel Engineering Co., Chicago, Ill.
McIntire Co., The, Livingston, N. J.
Micro Metallic Div., Pall Corp., Glen Cove, N. Y.
Newark Wire Cloth Co., Newark, N. J.
Norgren Co., C. A. Englewood, Colo.
Nugent & Co., Inc., Wm. W., Skokie, Ill.
Patrol Valve Co., The, Cleveland, O.
Porous Plastic Filter Co., Inc., Glen Cove, N. Y.
Purolator Products, Inc., Rahway, N. J.
Ronningen-Petter Co., Vicksburg, Mich.
Schroeder Brothers Corp., McKees Rocks, Pa. (hydraulic fluids)
Scientific Instrument Co., Detroit, Mich.
Selas Corp. of America, Dresher, Pa.
Serfass Corp., Philadelphia, Pa.
Sethco Mfg. Corp., Merrick, N. Y.
Trerice Co., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
Unifilter Co., Novi, Mich.
Warner Lewis Co., Div. of Fram Corp., Tulsa, Okla.
Watts Regulator Co., Lawrence, Mass.
Winslow Engineering & Mfg. Co., Oakland, Calif.
Worthington Corp., Harrison, N. J.

FILTERS, REFRIGERANT

American Felt Co., Glenville, Conn.
American-Standard Controls Div., Detroit, Mich.
Bendix Filter Div., Bendix Aviation Corp., Madison Heights, Mich.
Commercial Filters Corp., Melrose, Mass.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Cuno Engineering Corp., Meriden, Conn.
Delco Moraine Div., General Motors Corp., Dayton, O. (porous metal)
Dollinger Corp., Rochester, N. Y.
Hankison Corp., Canonsburg, Pa.
Hannifin Co., A Div. of Parker-Hannifin Corp., DesPlaines, Ill.
Henry Valve Co., Melrose Park, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Kenmore Machine Products, Inc., Lyons, N. Y.
Madden Brass Products Co., Aurora, Ill.
McIntire Co., The, Livingston, N. J.
Metrex Valve Co., Franklin Park, Ill.
Mueller Brass Co., Port Huron, Mich.
Newark Wire Cloth Co., Newark, N. J.
Phillips & Co., H. A., Chicago, Ill.
Porous Plastic Filter Co., Inc., Glen Cove, N. Y.
Refrigeration Research, Inc., Brighton, Mich.
Remco, Inc., Zelienople, Pa.
Ronningen-Petter Co., Vicksburg, Mich.
Sealed Unit Parts Co., Inc., New York, N. Y.
Sporlan Valve Co., St. Louis, Mo.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Vilter Mfg. Co., The, Milwaukee, Wis.
Wabash Corp., Chicago, Ill.

FILTERS, WATER

Adams Co., Inc., R. P., Buffalo, N. Y.
American Felt Co., Glenville, Conn.
American Water Softener Co., Philadelphia.
American Well Works, Aurora, Ill.
Andale Co., Philadelphia, Pa.
Aquatrol Ferr-X Corp., Clifton, N. J.
Austin Engineering & Mfg. Co., Inc., Ysleta (El Paso County) Texas
Barnebey-Cheney Co., Columbus, O.
Belco Industrial Equipment Div., Bogue Electric Mfg. Co., Paterson, N. J.
Bendix Filter Div., Bendix Aviation Corp., Madison Heights, Mich.
B-I-F Industries, Proportioneers Div., Providence, R. I.
Bruner Corp., Milwaukee, Wis.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Cochrane Corp., Philadelphia, Pa.
Commercial Filters Corp., Melrose, Mass.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Croll-Reynolds Engineering Co., Inc., Stamford, Conn.
Cuno Engneering Corp., Meriden, Conn.
Dearborn Chemical Co., Chicago, Ill.
Dollinger Corp., Rochester, N. Y.
Duro Co., Dayton, O.
Eddington Metal Specialty Co., Eddington, Pa.
Elgin Softener Corp., Elgin, Ill.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
Fram Corp., Providence, R. I.
Gelman Instrument Co., Chelsea, Mich. (for submicron filtration)
General Filter Co., Ames, Ia.
Graver Water Conditioning Co., New York, N. Y.
Greer Hydraulics, Inc., Los Angeles, Calif.
Harman Equipment Co., Los Angeles, Calif.
Hilliard Corp., Elmira, N.Y.
Hungerford & Terry, Inc., Clayton, N. J.
Illinois Water Treatment Co., Rockford, Ill.
Industrial Filter & Pump Co., Cicero, Ill.
Infilco, Inc., Tucson, Ariz.

Kaye & MacDonald, Inc., West Orange, N. J.
Kisco Boiler & Engineering Co., St. Louis.
Layne & Bowler, Inc., Memphis, Tenn.
Marvel Engineering Co., Chicago, Ill.
McIntire Co., The, Livingston, N. J.
Micro Metallic Div., Pall Corp., Glen Cove, N. Y.
Miller Mfg. Co., St. Paul, Minn.
Modern Water Equipment Co., Freeport, Ill.
Mueller Brass Co., Port Huron, Mich.
Newark Wire Cloth Co., Newark, N. J.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Pace Inc., R.M., Indianapolis, Ind.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Porous Plastic Filter Co., Inc., Glen Cove, N. Y.
Pudlo Liquid Filters, Inc., New Holstein, Wis.
Radiant Utilities Corp., Brooklyn, N. Y.
Red Jacket Mfg. Co., Davenport, Ia.
Reynolds Water Conditioning Co., Detroit, Mich.
Richmond Engineering Co., Richmond, Va.
Ronningen-Petter Co., Vicksburg, Mich.
Scharf Mfg. Co., J. H., Omaha, Nebr.
Selas Corp. of America, Dresher, Pa.
Sethco Mfg. Corp., Merrick, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Sparkler Mfg. Co., Conroe, Tex.
Sparkler-Filtrion Corp., North Chicago, Ill.
Stover Water Softener Co., St. Charles, Ill.
Tryco Products, Inc., Westfield, Mass.
Uniflow Mfg. Co., Erie, Pa.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Winslow Engineering & Mfg. Co., Oakland, Calif.
Worthington Corp., Harrison, N. J.

FINNED TUBING

See Tubing, Finned

FIRE EXTINGUISHING SYSTEMS

See Systems, Fire Extinguishing

FIRE PUMPS

See Pumps, Fire

FIRE VALVES AND VENTILATORS

See Ventilators, Roof, with Fusible Links

FITTINGS, ALUMINUM TUBE

Aeroquip Corp., Jackson, Mich.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
Anderson Metals Corp., Kansas City, Mo.
Crawford Fitting Co., Cleveland, O.
Elkhart Products Corp., Elkhart, Ind.
Flodar Corp., Cleveland, O.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Swepco Tube Corp., Clifton, N. J.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.

FITTINGS, BLOW PIPE

Allington & Curtis Mfg. Co., Saginaw, Mich.
American Blow Pipe Co., Chicago, Ill. (tapers, tees, elbows, etc.)
Carolina Blower Co., Inc., Greensboro, N. C.
Chicago Metal Mfg. Co., Chicago, Ill.
Day Co., The, Minneapolis, Minn.
DeVilbiss Metal Fabricators Co., Detroit, Mich.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Goethel Sheet Metal Works, Inc., Alfred, Milwaukee, Wis.
Griffin & Co., Louisville, Ky.
Kice Metal Products Co., Wichita, Kans.
Kirk & Blum Mfg. Co., Cincinnati, O.
Newcomb-Detroit Co., Detroit, Mich.
Puhl & Hepper Mfg. Co., Inc., St. Louis, Mo.
Research Vacuum Supply Co., Chicago, Ill.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Torit Mfg. Co., St. Paul, Minn.
United Sheet Metal Co., Inc., Columbus, O.
United States Register Co., Battle Creek, Mich.
Wer-Coy Fabrication Co., Detroit, Mich.
Winkler & Sons, Inc., A. E., Milwaukee, Wis.
Young & Bertke Co., Cincinnati, O.

FITTINGS AND BUSHINGS, FUEL OIL TANK; ALARMS, LIQUID LEVEL

Anderson Metals Corp., Kansas City, Mo.
Barclay, Inc., Robert, Chicago, Ill.
Brabant Brass Mfg. Co., Detroit, Mich.
Flagg & Co., Inc., Stanley G., Philadelphia.
OPW-Jordan Corp., Cincinnati, O.
Oil Equipment Mfg. Corp., New Haven, Conn.
Scully Signal Co., Melrose, Mass.
Spanco Brass Sales, Allegan, Mich.
U. S. Plug & Fitting Co., Wellington, O.
Ward Foundries, Inc., J. P., Blossburg, Pa.

FITTINGS FOR CENTRAL VACUUM CLEANING SYSTEMS

H-P Products, Inc., Louisville, O.
Kice Metal Products Co., Wichita, Kans.
Sloane Mfg. Co., Sun Valley, Calif.
Spencer Turbine Co., Hartford, Conn.

FITTINGS, COPPER TUBE, COMPRESSION

Acheson Mfg. Co., Rankin, Pa.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
American Sanitary Mfg. Co., Abingdon, Ill.
Anaconda American Brass Co., Waterbury, Conn.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Arbest Mfg. Co., Philadelphia, Pa.
Baker & Co., R. H., Los Angeles, Calif.
Brabant Brass Mfg. Co., Detroit, Mich.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Forging and Mfg. Co., Chicago, Ill.
Commonwealth Brass Corp., Detroit, Mich.
Couplings Co., Chicago, Ill.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Eagle Copper Products Co., Inc., Brooklyn, N. Y.
Elkhart Products Corp., Elkhart, Ind.
Flodar Corp., Cleveland, O.
Hays Mfg. Co., Erie, Pa.
Imperial-Eastman Corp., Chicago, Ill.
Lunkenheimer Co., Cincinnati, O.
Madden Brass Products Co., Aurora, Ill.
Mueller Brass Co., Port Huron, Mich.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Sall Bros. Co., Rockford, Ill.
Scovill Mfg. Co., Waterbury, Conn.
Spanco Brass Sales, Allegan, Mich.
Wabash Corp., Chicago, Ill.
Weatherhead Co., Ft. Wayne Div., Ft. Wayne, Ind.

FITTINGS, COPPER TUBE, FLARED

Acheson Mfg. Co., Rankin, Pa.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Anaconda American Brass Co., Waterbury, Conn.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Brabant Brass Mfg. Co., Detroit, Mich.
Cajon Machine Co., Cleveland, O.
Chase Brass & Copper Co., Waterbury, Conn.
Commonwealth Brass Corp., Detroit, Mich.
Couplings Co., Chicago, Ill.
Eagle Copper Products Co., Inc., Brooklyn, N. Y.
Elkhart Products Corp., Elkhart, Ind.
Flodar Corp., Cleveland, O.
Gardiner Metal Co., Chicago, Ill.
Hays Mfg. Co., Erie, Pa.
Imperial-Eastman Corp., Chicago, Ill.
Lunkenheimer Co., Cincinnati, O.
Madden Brass Products Co., Aurora, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mueller Co., Decatur, Ill.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Phoenix Brass Fittings Corp., Irvington, N. J.
Piper Industries, Inc., Roseville, Mich.
Remco, Inc., Zelienople, Pa.
Scovill Mfg. Co., Waterbury, Conn.
Spanco Brass Sales, Allegan, Mich.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Weatherhead Co., Ft. Wayne Div., Ft. Wayne, Ind.

FITTINGS, COPPER TUBE, SOLDER

Acheson Mfg. Co., Rankin, Pa.
American Sanitary Mfg. Co., Abingdon, Ill.
Anaconda American Brass Co., Waterbury, Conn.
Cajon Machine Co., Cleveland, O.
Chase Brass & Copper Co., Waterbury, Conn.
Commonwealth Brass Corp., Detroit, Mich.
Crane Co., Chicago, Ill.
Eagle Copper Products Co., Inc., Brooklyn, N. Y.
Elkhart Products Corp., Elkhart, Ind.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Gardiner Metal Co., Chicago, Ill.
General Fittings Co., East Greenwich, R. I.
Gerry Tool Co., Inc., Bronx, N. Y.
Grabler Mfg. Co., Cleveland, O.
Hubbell Corp., Mundelein, Ill.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Phoenix Brass Fittings Corp., Irvington, N. J.
Spanco Brass Sales, Allegan, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Union Metal Works Co., Inc., Chelsea, Mass.
Walworth Co., New York, N. Y. (silver brazed)

FITTINGS, DRAINAGE, FIXED AIR BREAK

Beaton & Cadwell Mfg. Co., New Britain, Conn.
Crane Co., Chicago, Ill.
Zurn Industries, Inc., Erie, Pa.

FITTINGS, EXHAUST, GARAGE, FOR ATTACHING CAR EXHAUST PIPE

Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.
Ammerman Co., Inc., Stillwater, Minn.
Engwald Corp., The, Inwood, Long Island, N. Y.
Kent-Moore Organization, Inc., Warren, Mich.
National System of Garage Ventilation, Inc., Decatur, Ill.
Wendt Co., O. A., Chicago, Ill.

FITTINGS, HOSE TO PIPE

Acheson Mfg. Co., Rankin, Pa.
Aeroquip Corp., Jackson, Mich.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
Allen Mfg. Co., W. D., Bellwood, Ill.
American Sanitary Mfg. Co., Abingdon, Ill. (for polyethylene plastic tubing)
Anchor Coupling Co. Inc., Libertyville, Ill.
Anderson Brass Co., Detroit, Mich.
Band-It Co., Denver, Colo.
Brabant Brass Mfg. Co., Detroit, Mich.
Campbell Mfg. Co., Inc., Boyertown, Pa.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.
Fine Products Co., Berwyn, Ill.
Flodar Corp., Cleveland, O.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Hewitt-Robbins, Inc., Stamford, Conn.
Hofmann Engineering Co., Chicago, Ill.
Hose Accessories Co., Philadelphia, Pa.
Jaco Mfg. Co., Berea, O. (nylon compression tube fitting)
Lenz Co., Dayton, O.
OPW-Jordan Corp., Cincinnati, O.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Piper Industries, Inc., Roseville, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.
Schaul Mfg. Co., Cleveland, O.

Spanco Brass Sales, Allegan, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
United States Rubber Co., New York, N. Y.
Weatherhead Co., Ft. Wayne Div., Ft. Wayne, Ind.

FITTINGS, HOT WATER HEATING SYSTEMS, ONE PIPE

American Tube & Controls, Inc., West Warwick, R. I.
Autostributor Co., Lansing, Mich. (manifold for connecting radiator branches)
Bell & Gossett Co., Morton Grove, Ill.
Bernstrom, Inc., C. R., Providence, R. I.
Brabant Brass Mfg. Co., Detroit, Mich.
Dunham-Bush, Inc., West Hartford, Conn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Mel Products Co., The, East Haven, Conn.
Panel Heat, Inc., Copiague, N. Y.
Piper Industries, Inc., Roseville, Mich.
Spanco Brass Sales, Allegan, Mich.
Sullivan Valve & Engineering Co., Butte, Mont.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Watts Regulator Co., Lawrence, Mass.

FITTINGS, LIFT

Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Webster & Co., Warren, Camden, N. J.

FITTINGS, LINED

American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber)
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Bart Mfg. Corp., Belleville, N. J.
Cement Lined Pipe Co., Lynn, Mass. (Lead and tin)
Division Lead Co., Summit, Ill. (lead)
Gates Engineering Co., Wilmington, Del.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (ceramics & graphite)
Goodrich Industrial Products Co., B. F., Akron, O.
Heil Process Equipment Corp., Cleveland, O.
Knapp Mills, Inc., Long Island City, N. Y.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Lead Lined Iron Pipe Co., Wakefield, Mass. (Lead and tin)
Luzerne Rubber Co., Trenton, N. J. (hard rubber)
Marquette Coppersmithing Co., Philadelphia.
Michigan Pipe Co., Ferndale, Mich. (Wood, saraloy)
National Lead Co., New York, N. Y. (Lead)
Nazar Rubber Co., Toledo, O.
Nibco, Inc., Elkhart, Ind. (Tinned)
Raybestos-Manhattan, Inc., Passaic, N. J. (Rubber)
Resisto Pipe & Valve Co., East Cambridge, Mass. (lead)
Saran Lined Pipe Co., Ferndale, Mich. (saran lined)
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y. (cement)
United States Rubber Co., New York, N. Y. (Rubber)

FITTINGS, PIPE, ALUMINUM

Airaterra (Roylyn Products), Glendale, Calif.
Allied Piping Products Co., Inc., Fittings Div., Salem, O.
Aluminum Co. of America, Pittsburgh, Pa.
American Flow Control Corp., Houston, Tex.
Bonney Forge & Tool Wks., Allentown, Pa.
Chemiquip Co., New York, N. Y.
Clayton Mark & Co., Evanston, Ill.
Flowline Corp., New Castle, Pa.
General Aluminum Supply Co., Kansas City, Mo.
Gustin-Bacon Mfg. Co., Kansas City, Mo.
Ladish Co., Cudahy, Wis.
Lucey Alloy Products Corp., Chattanooga, Tenn.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
OPW-Jordan Corp., Cincinnati, O.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J. (forged)
Roberts Co., C. A., Franklin Park, Ill.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Speedline Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky. (welding)
Victaulic Co. of America, Elizabeth, N. J
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, BRASS, THREADED

Acheson Mfg. Co., Rankin, Pa.
Aeroquip, Inc., Van Wert, O.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
American Manganese Bronze Co., Philadelphia, Pa.
American Sanitary Mfg. Co., Abingdon, Ill.
Anaconda American Brass Co., Waterbury, Conn.
Anchor Coupling Co. Inc., Libertyville, Ill.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Baker & Co., R. H., Los Angeles, Calif.
Bonney Forge & Tool Wks., Allentown, Pa.
Brabant Brass Mfg. Co., Detroit, Mich.
Chase Brass & Copper Co., Waterbury, Conn.
Chemiquip Co., New York, N. Y.
Commonwealth Brass Corp., Detroit, Mich.
Couplings Co., Chicago, Ill.
Crane Co., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Flodar Corp., Cleveland, O.
Gilbert Brass Foundry Co., St. Louis, Mo.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Imperial-Eastman Corp., Chicago, Ill.
Ken-Ray Brass Products, Inc., Vermont, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Madden Brass Products Co., Aurora, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mueller Brass Co., Port Huron, Mich.
New York Brass Fdry., New York, N. Y.
OPW-Jordan Corp., Cincinnati, O.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Phoenix Brass Fittings Corp., Irvington, N. J.
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Spanco Brass Sales, Allegan, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
U. S. Plug & Fitting Co., Wellington, O. (pipe plugs)
Union Metal Works Co., Inc., Chelsea, Mass.
Walworth Co., New York, N. Y. (Brazed)
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

FITTINGS, PIPE, BRASS, WELDING

Airaterra (Roylyn Products), Glendale, Calif.
Bonney Forge & Tool Wks., Allentown, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Clayton Mark & Co., Evanston, Ill.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Spanco Brass Sales, Allegan, Mich.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.

FITTINGS, PIPE, BRONZE, BRAZED

Acheson Mfg. Co., Rankin, Pa.
Anaconda American Brass Co., Waterbury, Conn.
Bonney Forge & Tool Works, Allentown, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Flagg & Co., Inc., Stanley G., Philadelphia.
Union Metal Works Co., Inc., Chelsea, Mass.
Walworth Co., New York, N. Y.

FITTINGS, PIPE, BRONZE, SOLDER

Acheson Mfg. Co., Rankin, Pa.
Anaconda American Brass Co., Waterbury, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
Crane Co., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
General Fittings Co., East Greenwich, R. I.
Gilbert Brass Foundry Co., St. Louis, Mo.
Grabler Mfg. Co., Cleveland, O.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Hubbell Corp., Mundelein, Ill.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Panel Heat, Inc., Copiague, N. Y.
Phoenix Brass Fittings Corp., Irvington, N. J.
Union Metal Works Co., Inc., Chelsea, Mass.

FITTINGS, PIPE, CAST IRON, FLANGED

Alabama Pipe Co., Anniston, Ala.
American Cast Iron Pipe Co., Birmingham, Ala.
Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Duriron Co., Inc., The, Dayton, O. (corrosion resisting)
Frick Co., Waynesboro, Pa.
Goodall Rubber Co., Trenton, N. J.
Grinnell Co., Inc., Providence, R. I.
Hubbell Corp., Mundelein, Ill.
Kuhns Bros. Co., Dayton, O.
Lead Lined Iron Pipe Co., Inc., Wakefield, Mass. (Lead lined)
Lynchburg Foundry Co., Lynchburg, Va.
Malleable Iron Fittings Co., Branford, Conn.
Parks-Cramer Co., Fitchburg, Mass. (Jacketed)
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y.
Stockham Valves & Fittings, Birmingham, Ala.
United States Pipe & Foundry Co., Birmingham, Ala.
Vilter Mfg. Co., The, Milwaukee, Wis.
Walworth Co., New York, N. Y.

FITTINGS, PIPE, CAST IRON, MECHANICAL JOINT

Alabama Pipe Co., Anniston, Ala.
American Cast Iron Pipe Co., Birmingham, Ala.
Clow & Sons, Inc., James B., Chicago, Ill.
Grinnell Co., Inc., Providence, R. I.
Inner-Tite Div. of Yara Engineering Corp., Elizabeth, N. J.
Lynchburg Foundry Co., Lynchburg, Va.
McWane Cast Iron Pipe Co., Birmingham, Ala.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y.

FITTINGS, PIPE, CAST IRON, THREADED

Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Frick Co., Waynesboro, Pa.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Hubbell Corp., Mundelein, Ill.
Illinois Malleable Iron Co., Chicago, Ill.
Kuhns Bros. Co., Dayton, O.
Malleable Iron Fittings Co., Branford, Conn.
Newbery Mfg. Co., Inc., Talladega, Ala.
Ravena Iron Co., Ravena, N. Y.
Rich Mfg. Co. of California, Los Angeles, Calif.
Stockham Valves & Fittings, Birmingham, Ala.
U. S. Plug & Fitting Co., Wellington, O. (pipe plug)
Union Malleable Mfg. Co., Ashland, O.
Vilter Mfg. Co., The, Milwaukee, Wis.

Walworth Co., New York, N. Y.
Ward Foundries Inc., J. P., Blossburg, Pa.
Zurn Industries, Inc., Erie, Pa.

FITTINGS, PIPE, COMPRESSION

Adams Pipe Repair Products, So. El Monte, Calif.
Anderson Metals Corp., Kansas City, Mo.
Baker & Co., R. H., Los Angeles, Calif.
Brabant Brass Mfg. Co., Detroit, Mich.
Chase Brass & Copper Co., Waterbury, Conn.
Cooper Alloy Corp., Hillside, N. J.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Guardian Products Corp., Michigan City, Ind.
Hays Mfg. Co., Erie, Pa.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Piper Industries, Inc., Roseville, Mich.
Sall Bros. Co., Rockford, Ill.
Smith-Blair, Inc., S. San Francisco, Calif.
Telsco Fittings Div., Dallas, Tex.
Tru-Seal Div., Flick-Reedy Corp., Bensenville, Ill.
York Div., Borg-Warner Corp., York, Pa.

FITTINGS, PIPE, FIBER

Brown Co., Boston, Mass.
Central Foundry Co., New York, N. Y.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.

FITTINGS, PIPE, HARD RUBBER

American Flow Control Corp., Houston, Tex.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Gates Engineering Co., Wilmington, Del.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Luzerne Rubber Co., Trenton, N. J.
Nazar Rubber Co., Toledo, O.
United States Rubber Co., New York, N. Y.
Vanton Pump & Equipment Corp., Hillside, N. J.

FITTINGS, PIPE, JACKETED

Albert Pipe Supply Co., Inc., Brooklyn, N. Y.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Hetherington & Berner, Inc., Indianapolis, Ind.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parks-Cramer Co., Fitchburg, Mass.
Red Jacket Co., Inc., Carnegie, Pa.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, LEAD

American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Anchor Metal Co., Inc., Brooklyn, N. Y.
Bunker Hill Co., The, Sales & Fabrication Div., San Francisco, Calif.
Division Lead Co., Summit, Ill.
Flemm Lead Co., Inc., Long Island City, N. Y.
Heil Process Equipment Corp., Cleveland, O.
Knapp Mills, Inc., Long Island City, N. Y.
Lead Lined Iron Pipe Co., Wakefield, Mass.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mueller Co., Decatur, Ill.
National Lead Co., New York, N. Y.
Piper Industries, Inc., Roseville, Mich.
Resisto Pipe & Valve Co., East Cambridge, Mass.
Rochester Lead Works, Inc., Rochester, N. Y.

FITTINGS, PIPE, MALLEABLE

Adams Pipe Repair Products, So. El Monte, Calif.
Beaton & Corbin Mfg. Co., Southington, Conn.
Corley Co., Inc., The, Bounton, N. J.
Crane Co., Chicago, Ill.
Fairbanks Co., The, New York, N. Y.
Flagg & Co., Inc., Stanley G., Philadelphia.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Gustin-Bacon Mfg. Co., Kansas City, Mo.
Illinois Malleable Iron Co., Chicago, Ill.
James Foundry Corp., Ft. Atkinson, Wis.
Ladish Co., Cudahy, Wis.
Malleable Iron Fittings Co., Branford, Conn.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.

Rhode Island Fittings Co., Providence, R. I.
Stockham Valves & Fittings, Birmingham.
Telesco Fittings Div., Dallas, Tex.
U. S. Plug & Fitting Co., Wellington, O. (pipe plugs)
Union Malleable Mfg. Co., Ashland, O.
Vitaulic Co. of America, Elizabeth, N. J.
Walworth Co., New York, N. Y.
Ward Foundries, Inc., J. P., Blossburg, Pa.

FITTINGS, PIPE, NICKEL AND NICKEL ALLOY

American Manganese Bronze Co., Philadelphia, Pa.
Bart Mfg. Corp., Belleville, N. J.
Bonney Forge & Tool Wks., Allentown, Pa.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Flowline Corp., New Castle, Pa.
Gray Tool Co., Houston, Tex.
Harrison Steel Corp., Brooklyn, N. Y.
Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
International Nickel Co., Inc., The, New York, N. Y.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Sheldon & Co., Inc., M. L., New York, N. Y.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky. (welding)
Walworth Co., New York, N. Y.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, NICKEL PLATED

Acheson Mfg. Co., Rankin, Pa.
Bart Mfg. Corp., Belleville, N. J.
Midwest Piping Co., Inc., St. Louis, Mo.
Sheldon & Co., Inc., M. L., New York, N. Y.
Taylor Forge & Pipe Wks., Chicago, Ill.

FITTINGS, PIPE, NYLON

Campbell Mfg. Co., Inc., Boyertown, Pa.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Crescent Plastics, Inc., Evansville, Ind.
Flodar Corp., Cleveland, O.
Nylon Molding Corp., Garwood, N. J.
Plastiline, Inc., Pompano Beach, Fla.
Union Malleable Mfg. Co., Ashland, O.
Wheeling Machine Products Co., Wheeling, W. Va.

FITTINGS, PIPE, PLASTIC

Albert Pipe Supply Co., Inc., Brooklyn, N. Y.
Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Agile Corp., Bedford, O.
American Flow Control Corp., Houston, Tex.
American Vulcathene Div. Nalge Co., Inc., Rochester, N. Y. (polyethylene)
Anesite Co., Chicago, Ill.
Argo Plastic Products, Cleveland, O.
Atlas Mineral Products Co., Mertztown, Pa.
Campbell Mfg. Co., Inc., Boyertown, Pa.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Carlon Products Corp., Aurora, O.
Chesflex Div., St. Regis Paper Co., Yonkers, N. Y.
Clayton Mark & Co., Evanston, Ill.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.
Commercial Plastics Co., Chicago, Ill.
Conley Plastic Corp., Ed, Tulsa, Okla.
Consolidated Pipe Co. of America, Akron, O.
Crane Co., Chicago, Ill.
Crescent Plastics, Inc., Evansville, Ind.
Dow Chemical Co., The, Midland, Mich. (saran-lined)
Evanite Plastic Co., Div. of the Evans Pipe Co., Uhrichsville, O.
Fibercast Co., Sand Spring, Okla.
Flodar Corp., Cleveland, O.
Franklin Plastics, Inc., Franklin, Pa. (nylon and styrene)
General Ceramics Div. of Indiana General Corp., Keasbey, N. J.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC)
Grinnell Co., Inc., Providence, R. I.
Haveg Industries, Inc., Wilmington, Del.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Industrial Plastic Fittings Co., Towson, Md.
Jaco Mfg. Co., Berea, O. (nylon compression tube fitting)
Johnson Plastics Corp., Chagrin Falls, O.
Kraloy Plastic Pipe Co., Inc., Los Angeles.
Luzerne Rubber Co., Trenton, N. J.
Mannesmann-Easton Plastic Products Co., Inc., Easton, Pa. (rigid unplasticized polyvinyl chloride)
Manufacturers Corp., Mansfield, O.
Moore & Co., Samuel, Mantua, O. (tubing)
Mulconroy Co., Philadelphia, Pa.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Orangeburg Mfg. Co., Orangeburg, N. Y.
Pipeline Coatings & Engineering Co., Los Angeles, Calif.
Plastex Co., Columbus, O.
Plastiline, Inc., Pompano Beach, Fla.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles.
Porter Co., Inc., H. K., Thermoid Div., Philadelphia, Pa.
Protokap, Inc., Houston, Tex. (end caps)
Rauh & Associates, Inc., Cornelius A., Akron, O.
Reflin Co., San Diego, Calif. (rigid, reinforced with glass fibers)
Republic Steel Corp., Cleveland, O.
Robinson Clay Product Co., The, Akron, O.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
S & C Mfg. Co., Cincinnati, O
Santa Ana Plastics Div., Rexall Drug & Chemical Corp., Santa Ana, Calif. (PVC)
Saran Lined Pipe Co., Ferndale, Mich. (saran)
Seelye Craftsmen, Inc., Minneapolis, Minn.
Sloane Mfg. Co., Sun Valley, Calif. (PVC, A.B.S. butyrate)
Southwestern Plastic Pipe Co., Mineral Wells, Tex.
Telsco Fittings Div., Dallas, Tex.
Trans-Plastics Corp., Inc., Cleveland, O.
Tube Turns Plastics, Inc., Louisville, Ky. (injection molded UPVC, and others)
Union Malleable Mfg. Co., Ashland, O.
United States Rubber Co., New York, N. Y.
United States Stoneware Co., New York.
Vanton Pump & Equipment Corp., Hillside, N. J.
Victaulic Co. of America, Elizabeth, N. J.
Walworth Co., New York, N. Y.
Wheeling Machine Products Co., Wheeling, W. Va.
Yardley Plastics Co., Columbus, O.

FITTINGS, PIPE, SADDLE TEE

See Tees, Saddle

FITTINGS, PIPE, SANITARY

Acheson Mfg. Co., Rankin, Pa.
American Vulcathene Div. Nalge Co., Inc., Rochester, N. Y.
Central Foundry Co., New York, N. Y.
Duriron Co., Inc., The, Dayton, O. (corrosion resisting)
Epco Sales, Inc., Cleveland, O.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Mueller Brass Co., Port Hurón, Mich.
Robinson Clay Product Co., The, Akron, O.
Somerville Iron Works, Inc., Chattanooga, Tenn.
Stockham Valves & Fittings, Birmingham, Ala.
Union Malleable Mfg. Co., Ashland, O.
Union Metal Works Co., Inc., Chelsea, Mass.

FITTINGS, PIPE, SLIP-ON

Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Clayton Mark & Co., Evanston, Ill.
Fibercast Co., Sand Spring, Okla.
Hollaender Mfg. Co., Cincinnati, O.
Telsco Fittings Div., Dallas, Tex.

FITTINGS, PIPE, SPECIAL FOR BASEBOARD RADIATION

Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.
General Fittings Co., East Greenwich, R. I.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Panel Heat, Inc., Copiague, N. Y.
Rittling Corp., The, Buffalo, N. Y.
Union Metal Works Co., Inc., Chelsea, Mass.
Webster & Co., Warren, Camden, N. J.

FITTINGS, PIPE, STAINLESS STEEL

Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Allied Piping Products Co., Inc., Fittings Div., Salem, O.
Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Alloy Stainless Products Co., Totowa, N. J.
American Flow Control Corp., Houston, Tex.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Baker & Co., R. H., Los Angeles, Calif.
Bonney Forge & Tool Wks., Allentown, Pa.
Cajon Machine Co., Cleveland, O.
Camco Fittings, Inc., North Haven, Conn.
Chemiquip Co., New York, N. Y.
Clayton Mark & Co., Evanston, Ill.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Flodar Corp., Cleveland, O.
Gray Tool Co., Houston, Tex.
Harrison Steel Corp., Brooklyn, N. Y.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Lucey Alloy Products Corp., Chattanooga, Tenn.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
OPW-Jordan Corp., Cincinnati, O.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Portland Cooper & Tank Wks., Inc., South Portland, Me.
Pypon Co., Pittsburgh, Pa.
Roberts Co., C. A., Franklin Park, Ill.
Sheldon & Co., Inc., M. L., New York, N. Y.
Special Screw Products, Bedford, O.
Speedline Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tru-Seal Div., Flick-Reedy Corp., Bensenville, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
U. S. Plug & Fitting Co., Wellington, O. (pipe plugs)
Victaulic Co. of America, Elizabeth, N. J.
Walworth Co., New York, N. Y.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, STAINLESS STEEL, WELDING

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bonney Forge & Tool Wks., Allentown, Pa.
Camco Fittings, Inc., North Haven, Conn.
Clayton Mark & Co., Evanston, Ill.
Cooper Alloy Corp., Hillside, N. J.
Esco Corp., Portland, Ore.
Flowline Corp., New Castle, Pa.
Grinnell Co., Inc., Providence, R. I.
Harrison Steel Corp., Brooklyn, N. Y.
Heat & Power Corp., Baltimore, Md.
Ladish Co., Cudahy, Wis.
Lucey Alloy Products Corp., Chattanooga, Tenn.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Portland Copper & Tank Works, Inc., South Portland, Me.
Roberts Co., C. A., Franklin Park, Ill.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Special Screw Products, Bedford, O.
Speedline Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, STEEL, FLANGED

Alco Products, Inc., Schenectady, N. Y.
Bradshaw Steel & Forge Co., Panama City, Fla.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Frick Co., Waynesboro, Pa.
Gray Tool Co., Houston, Tex.
Henry Valve Co., Melrose Park, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lead Lined Iron Pipe Co., Inc., Wakefield, Mass. (Lead lined)
Naylor Pipe Co., Chicago, Ill.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Pipe Line Development Co., Cleveland, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

FITTINGS, PIPE, STEEL, FORGED, THREADED

Alpha Plastics, Inc., Livingston, N. J. (PVC)
Bonney Forge & Tool Works, Allentown, Pa.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Clayton Mark & Co., Evanston, Ill.
Crane Co., Chicago, Ill.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
U. S. Pipe & Mfg. Co., S. San Francisco, Calif. (pipe plug)
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Wheeling Machine Products Co., Wheeling, W. Va.

FITTINGS, PIPE, STEEL, SOCKET WELD

Alpha Plastics, Inc., Livingston, N. J. (PVC)
Bonney Forge & Tool Works, Allentown, Pa.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Clayton Mark & Co., Evanston, Ill.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Harrison Steel Corp., Brooklyn, N. Y.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Ladish Co., Cudahy, Wis.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Special Screw Products, Bedford, O.
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

FITTINGS, PIPE, STEEL, THREADED

Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Bonney Forge & Tool Works, Allentown, Pa.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Crane Co., Chicago, Ill.
Fine Products Co., Berwyn, Ill.
Flodar Corp., Cleveland, O.
Frick Co., Waynesboro, Pa.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Ladish Co., Cudahy, Wis.
Lenz Co., Dayton, O.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Republic Steel Corp., Cleveland, O.
Sawhill Tubular Products, Inc., Sharon, Pa.
Tru-Seal Div., Flick-Reedy Corp., Bensenville, Ill.
Tubing Seal-Cap Co., San Gabriel, Calif. (plugs and caps)
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Wheeling Machine Products Co., Wheeling, W. Va.

FITTINGS, PIPE, STEEL, WELDING

Allied Piping Products Co., Inc., Fittings Div., Salem, O.
Anchor Coupling Co., Inc., Libertyville, Ill.
Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Beaird Co., J. B., Shreveport, La.
Bonney Forge & Tool Works, Allentown, Pa.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Crane Co., Chicago, Ill.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Esco Corp., Portland, Ore.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Heat & Power Corp., Baltimore, Md.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Jackson-Markus Supply Co., Los Angeles, Calif.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Naylor Pipe Co., Chicago, Ill.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
O. T. M. Corp., Houston, Tex.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Pipe Line Development Co., Cleveland, O.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Vilter Mfg. Co., The, Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Youngstown Welding & Engineering Co., Youngstown, O.

FITTINGS, PIPE, STEEL, WELDING, SEAMLESS

Babcock & Wilcox., Tubular Products Div., Beaver Falls, Pa.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.

Crane Co., Chicago, Ill.
Grinnell Co., Inc., Providence, R. I.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Nibco, Inc., Elkhart, Ind.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
O.T.M. Corp., Houston, Tex.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Special Screw Products, Bedford, O.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FITTINGS, PIPE, VITRIFIED CLAY

American Vitrified Products Co., Cleveland.
Knight Co., Maurice A., Akron, O. (acid proof)
National Clay Pipe Mfg. Inc., Washington, D. C.
Robinson Clay Products Co., The, Akron, O.
Straitsville Brick Co., New Straitsville, O.
Texas Vitrified Pipe Co., Mineral Wells, Tex.
United States Concrete Pipe Co., Universal Sewer Pipe Div., Cleveland, O.

FITTINGS, PIPE, WROUGHT IRON, WELDING

Albert Pipe Supply Co., Inc., Brooklyn, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bonney Forge & Tool Works, Allentown, Pa.
Byers Co., A. M., Pittsburgh, Pa.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Grinnell Co., Inc., Providence, R. I.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Penn Mfg. Corp. of Washington, Pa., Washington, Pa.
Steel Forgings, Inc., Shreveport, La.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FITTINGS, REFRIGERATION

Aeroquip, Inc., Van Wert, O.
Anaconda American Brass Co., Waterbury, Conn.
Anderson Metals Corp., Kansas City, Mo.
Brabant Brass Mfg. Co., Detroit, Mich.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Forging and Mfg. Co., Chicago, Ill.
Commonwealth Brass Corp., Detroit, Mich.
Crane Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago.
Elkhart Products Corp., Elkhart, Ind.
Flodar Corp., Cleveland, O.
Frick Co., Waynesboro, Pa.
Henry Valve Co., Melrose Park, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Madden Brass Products Co., Aurora, Ill.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Piper Industries, Inc., Roseville, Mich.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Remco, Inc., Zelienople, Pa.
Shank Co., Cyrus, Chicago, Ill.
Spanco Brass Sales, Allegan, Mich.
Superior Valve & Fittings Co., Pittsburgh.
U. S. Plug & Fitting Co., Wellington, O. (pipe plugs)
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Weatherhead Co., The. Ft. Wayne Div., Ft. Wayne, Ind.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.

FITTINGS, STEEL TUBE, FLARED

Aeroquip, Inc., Van Wert, O.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
Anchor Coupling Co., Inc., Libertyville, Ill.
Cajon Machine Co., Cleveland, O.
Couplings Co., Chicago, Ill.
Flodar Corp., Cleveland, O.
H-P Products, Inc., Louisville, O.
Imperial-Eastman Corp., Chicago, Ill.
Lenz Co., Dayton, O.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Piper Industries, Inc., Roseville, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.
Special Screw Products, Bedford, O.
Swepco Tube Corp., Clifton, N. J.
Watts Electric & Mfg. Co., Birmingham, Mich.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

FITTINGS, STEEL TUBE, FLARELESS

Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
American Flow Control Corp., Houston, Tex.
Chicago Forging and Mfg. Co., Chicago, Ill.
Crawford Fitting Co., Cleveland, O.
Flodar Corp., Cleveland, O.
H-P Products, Inc., Louisville, O.
Imperial-Eastman Corp., Chicago, Ill.
Lenz Co., Dayton, O.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Sawhill Tubular Products, Inc., Sharon, Pa.
Special Screw Products, Bedford, O.
Swepco Tube Corp., Clifton, N. J.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Youngstown Welding & Engineering Co., Youngstown, O.

FLAME CONTROLS

See Controls, Flame Failure

FLAME CUTTERS

See Cutters, Flame

FLAME DETECTORS

See Systems, Combustion Control

FLANGE BOLTS

See Bolts and Studs, Flange

FLANGE COVERS

See Covers, Protective, Valve and Flange

FLANGE LINE-UP

See Pins, for Flange Line-Up

FLANGE SEPARATORS

See Separators, Flange

FLANGES, ORIFICE

American Meter Co., Inc., Philadelphia, Pa.
Barton Instrument Corp., Monterey Park, Calif.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bradshaw Steel & Forge Co., Panama City, Fla.
Bristol Co., The, Waterbury, Conn.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Grinnell Co., Inc., Providence, R. I.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Ladish Co., Cudahy, Wis.
Madden Corp., The, Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Midwest Piping Co., Inc., St. Louis, Mo.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
New York Brass Foundry, New York, N. Y. (brass)
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
O. T. M. Corp., Houston, Tex.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Pennsylvania Forge Div. of Chemetron Corp., Philadelphia, Pa.
Phoenix Mfg. Co., Div. Union Tank Car Co., Catasauqua, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Taylor Forge & Pipe Wks., Chicago, Ill.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, ALLOY STEEL, LAP JOINT

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Gray Tool Co., Houston, Tex.
Grinnell Co., Inc., Providence, R. I.
Harrison Steel Corp., Brooklyn, N. Y.
Ladish Co., Cudahy, Wis.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
O.T.M. Corp., Houston, Tex.
Pennsylvania Forge Div. of Chemetron Corp., Philadelphia, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Div. Union Tank Car Co., Catasauqua, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, ALLOY STEEL, SCREWED

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Beaird Co., J. B., Shreveport, La.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Grinnell Co., Inc., Providence, R. I.
Harrison Steel Corp., Brooklyn, N. Y.
Henry Valve Co., Melrose Park, Ill.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
O.T.M. Corp., Houston, Tex.
Pennsylvania Forge Div. of Chemetron Corp., Philadelphia, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Div. Union Tank Car Co., Catasauqua, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Sheldon & Co., Inc., M. L., New York, N. Y.
Star Stainless Screw Co., Paterson, N. J.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, ALLOY STEEL, WELDING

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Gray Tool Co., Houston, Tex.
Grinnell Co., Inc., Providence, R. I.
Harrison Steel Corp., Brooklyn, N. Y.
Henry Valve Co., Melrose Park, Ill.
Ladish Co., Cudahy, Wis.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.

O.T.M. Corp., Houston, Tex.
Pennsylvania Forge Div. of Chemetron Corp., Philadelphia, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Div. Union Tank Car Co., Catasauqua, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Star Stainless Screw Co., Paterson, N. J.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, ALUMINUM, WELDING

Flowline Corp., New Castle, Pa.
Grinnell Co., Inc., Providence, R. I.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
O.T.M. Corp., Houston, Tex.
Pennsylvania Forge Div. of Chemetron Corp., Philadelphia, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Speedline Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.

FLANGES, PIPE, BRASS, SCREWED

Acheson Mfg. Co., Rankin, Pa.
Brabant Brass Mfg. Co., Detroit, Mich.
Chase Brass & Copper Co., Waterbury, Conn.
Crane Co., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Providence, R. I.
Ladish Co., Cudahy, Wis.
New York Brass Foundry, New York, N. Y.
Nibco, Inc., Elkhart, Ind.
O.T.M. Corp., Houston, Tex.
Phoenix Brass Fittings Corp., Irvington, N. J.
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Quaker City Iron Wks., Philadelphia, Pa.
Ritter Pattern & Casting Co., New York, N. Y.
Spanco Brass Sales, Allegan, Mich.
Taylor Forge & Pipe Works, Chicago, Ill.
Union Metal Works Co., Inc., Chelsea, Mass.
Walworth Co., New York, N. Y.

FLANGES, PIPE, CAST IRON, SCREWED

Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Frick Co., Waynesboro, Pa.
G. & H Mfg. Co., Philadelphia, Pa.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
James Foundry Corp., Ft. Atkinson, Wis.
Kuhns Bros Co., Dayton, O.
Lynchburg Foundry Co., Lynchburg, Va.
OPW-Jordan Corp., Cincinnati, O.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Ravena Iron Co., Ravena, N. Y.
Ritter Pattern & Casting Co., New York, N. Y.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y.
Stockham Valves & Fittings, Birmingham, Ala.
Union Malleable Mfg. Co., Ashland, O.
Vilter Mfg. Co., The, Milwaukee, Wis.
Walworth Co., New York, N. Y.
Ward Foundries, Inc., J. P., Blossburg, Pa.
York Div., Borg-Warner Corp., York, Pa.

FLANGES, PIPE, MALLEABLE IRON, SCREWED

Crane Co., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Grinnell Co., Inc., Providence, R. I.
Jefferson Union Co., Lexington, Mass.
Ladish Co., Cudahy, Wis.
Union Malleable Mfg. Co., Ashland, O.
Walworth Co., New York, N. Y.
York Div., Borg-Warner Corp., York, Pa.

FLANGES, PIPE, NICKEL AND NICKEL ALLOY

Bart Mfg. Corp., Belleville, N. J.
Camco Fittings, Inc., North Haven, Conn.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Flowline Corp., New Castle, Pa.
Gray Tool Co., Houston, Tex.
Harrison Steel Corp., Brooklyn, N. Y.
Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
International Nickel Co., Inc., The, New York, N. Y.
Ladish Co., Cudahy, Wis.
Marquette Coppersmithing Co., Philadelphia.
Midwest Piping Co., Inc., St. Louis, Mo.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Pennsylvania Forge Div. of Chemetron Corp., Philadelphia, Pa.
Sheldon & Co., Inc., M. L., New York, N. Y.
Speedline Fittings Div., Horace T. Potts Co., Philadelphia, Pa.
Star Stainless Screw Co., Paterson, N. J.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, PLASTIC

American Agile Corp., Bedford, O.
American Vulcathene Div. Nalge Co., Inc., Rochester, N. Y. (polyethylene)
Argo Plastic Products, Cleveland, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.
Commercial Plastic Co., Chicago, Ill.
Conley Plastic Corp., Ed, Tulsa, Okla.
Crescent Plastics, Inc., Evansville, Ind. (PVC)
Dow Chemical Co., The, Midland, Mich. (saran-lined)
Fibercast Co., Sand Spring, Okla.
Goodrich Industrial Products Co., B. F., Akron, O.
Grinnell Co., Inc., Providence, R. I.
Haveg Industries, Inc., Wilmington, Del.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Luzerne Rubber Co., Trenton, N. J.
Mannesmann-Easton Plastic Products Co., Inc., Easton, Pa. (rigid unplasticized polyvinyl chloride)
Plastiline, Inc., Pompano Beach, Fla.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles.
Santa Ana Plastics Div., Rexall Drug & Chemical Corp., Santa Ana, Calif. (PVC)
Sloane Mfg. Co., Sun Valley, Calif.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.
Tube Turns Plastics, Inc., Louisville, Ky. (UPVC)
Vanton Pump & Equipment Corp., Hillside, N. J.

FLANGES, PIPE, STEEL, FORGED

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Crane Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago.
Gray Tool Co., Houston, Tex.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Harrison Steel Corp., Brooklyn, N. Y.
Henry Valve Co., Melrose Park, Ill.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
O. T. M. Corp., Houston, Tex.
Pennsylvania Forge Div. of Chemetron Corp., Philadelphia, Pa.
Phoenix Mfg. Co., Div. Union Tank Car Co., Catasauqua, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, STEEL, LAP JOINT

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Crane Co., Chicago, Ill.
Gray Tool Co., Houston, Tex.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Ladish Co., Cudahy, Wis.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
O.T.M. Corp., Houston, Tex.
Pennsylvania Forge Div. of Chemetron Corp., Philadelphia, Pa.
Phoenix Mfg. Co., Div. Union Tank Car Co., Catasauqua, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Swepco Tube Corp., Clifton, N. J.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, STEEL, SCREWED

Babcock & Wilcox Co., The, Tubular Products Div., Beaver Falls, Pa.
Beaird Co., J. B., Shreveport, La.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Frick Co., Waynesboro, Pa.
Gray Tool Co., Houston, Tex.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
O.T.M. Corp., Houston, Tex.
Pennsylvania Forge Div. of Chemetron Corp., Philadelphia, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Div. Union Tank Car Co., Catasauqua, Pa.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Sheldon & Co., Inc., M. L., New York, N. Y.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
U. S. Plug & Fitting Co., Wellington, O.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

FLANGES, PIPE, STEEL, WELDING

Alco Products, Inc., Schenectady, N. Y.
Allegheny Valve Co., Warren, Pa.
Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bradshaw Steel & Forge Co., Panama City, Fla.
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Gray Tool Co., Houston, Tex.
Grinnell Co., Inc., Providence, R. I.
Harrisburg Steel Co., Div. of Harsco Corp., Harrisburg, Pa.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.

Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Naylor Pipe Co., Chicago, Ill.
O.T.M. Corp., Houston, Tex.
Pennsylvania Forge Div. of Chemetron Corp., Philadelphia, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Div. Union Tank Car Co., Catasauqua, Pa.
Pipe Line Development Co., Cleveland, O.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Roessing Mfg. Co., Pittsburgh, Pa.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Forgings of America, Inc., Portland, Ore.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Williamson, Inc., T. D., Tulsa, Okla.

FLARED FITTINGS, COPPER TUBE

See Fittings, Copper, Tube, Flared

FLARED FITTINGS, STEEL TUBE

See Fittings, Steel Tube, Flared

FLARING TOOLS FOR TUBING

See Tools, Flaring

FLEXIBLE COUPLINGS

See Couplings, Flexible

FLEXIBLE DUCT CONNECTIONS

See Connections, Duct, Flexible

FLEXIBLE DUCTS

See Ducts and Duct Fittings, Prefabricated, Flexible, Metallic and Non-Metallic

FLEXIBLE METAL HOSE

See Hose, Flexible, Metal and Fittings

FLOAT SWITCHES

See Switches, Float

FLOAT VALVES

See Valves, Float

FLOATS, STEAM TRAP, ETC.

Armstrong Machine Wks., Three Rivers, Mich.
Bailey Co., Chas. M., San Francisco, Calif.
Chicago Float Works, Not Inc., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Harris & Co., Arthur, Chicago, Ill. (all metals)
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
McAlear Mfg. Co., Chicago, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Reichert Float & Mfg. Co., Toledo, O.
Sarco Co., Inc., New York, N. Y.
Sterling Engineering Mfg. Corp., Hyde Park, Mass.
Trane Co., The, La Crosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Watson & McDaniel Co., Philadelphia, Pa.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.

FLOOR AND CEILING PLATES

See Plates, Floor and Ceiling

FLOW ALARMS

See Alarms, High and Low Flow for Piping Systems

FLOW CONTROL VALVES

See Valves, Flow Control

FLOW MEASURING NOZZLES AND TUBES

See Nozzles, Flow Measuring

FLOW METERS

See Meters, Flow

FLOW SWITCHES

See Switches, Flow

FLOW TRANSMITTERS

See Transmitters, Flow

FLUE SPILLAGE SWITCH

See Switches, Flue Spillage, for Shutting Off Gas Burner

FLUXES

See Solders and Fluxes

FORGED STEEL VALVES

See Valves, Forged Steel

FRAMES, AIR INLET, PREFABRICATED, FOR AIR CONDITIONING UNITS

Airtron Corp., Div. of the Higgins Metal Products Co., Swanton, O.
Courier Associates, Inc., New York, N. Y.
Lewis Mfg. Co., Inc., Miami, Fla.

FRAMES FOR HOLDING PANEL TYPE AIR FILTERS

Air Devices, Inc., New York, N. Y.
Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
Continental Air Filters, Inc., Louisville, Ky.
Courier Associates, Inc., New York, N. Y.
Evans Corp., The George, Moline, Ill.
Filt-R-Ite Co., Chicago, Ill.
Temtrol, Inc., Okarche, Okla.
Union Carbide Development Co., Div. of Union Carbide Corp., New York, N. Y.

FRESHENERS, AIR

See Adsorbers, Odor, for Duct Systems; Compounds, Air Freshening

FUEL ECONOMIZERS

See Economizers, Fuel

FUEL OIL LEAK DETECTORS

See Detectors, Leak, Fuel Oil

FUEL OIL METERING VALVES

See Valves, Fuel Oil, Metering

FUEL OIL UNITS

See Units, Fuel Oil, Heating, Pumping and Straining

FURNACES, DUCT

See Heaters, Duct

FURNACES, SUSPENDED

See Heaters, Air, Direct Fired

FURNACES, WARM AIR, FOR INDUSTRIAL AND LARGE BUILDING CENTRAL HEATING

Exclusively for duct distribution of air—300,000 Btu per hr and over. For direct fired heaters, which may be located in the space heated or may be used in central plant installations with duct distribution of the air, see the listings under Heaters, Air, Direct Fired.

Air Conditioning Engineering Co., Cambridge, Mass.
Air Heaters, Inc., Youngstown, O.
Aladdin Heating Corp., San Leandro, Calif.
American Foundry & Furnace Co., Bloomington, Ill.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Arkos Mfg. Co., Detroit, Mich.
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Bard Mfg. Co., Bryan, O.
Besser Furnace and Air Conditioning Corp., Charlotte, N. C.
Bryant Mfg. Co., Indianapolis, Ind.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Century Engineering Corp., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Elk Grove, Ill.
Cox Mfg. Co., Ridgeville, Ind.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Hayes Furnace Mfg. & Supply Co., Torrance, Calif.
Inland Heater Corp., St. Paul, Minn.
International Heater Co., Utica, N. Y.
Jackson & Church Co., Saginaw, Mich.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Johnson Heater Corp., Chelsea, Mass.
Lee Corporation, Wilmington, Del.
Lennox Industries Inc., Columbus, O.
Lennox Industries Inc., Marshalltown, Ia.
MaGirl Foundry & Furnace Co., Bloomington, Ill.
Mammoth Industries, Inc., Minneapolis, Minn.
Mastro-Hoskinson Mfg. Corp., Inc., Franklin Sq., Long Island, N. Y.
McPherson Furnace & Supply Co., Portland, Ore.
Meyer Furnace Co., The, Peoria, Ill.
Miller-Church Industries, Inc., Eaton Rapids, Mich.
Montag Inc., Portland, Ore.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National Heater Co., Inc., St. Paul Minn.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Norwalk Air Conditioning Corp., S. Norwalk, Conn.
Patten Co., J. V., Sycamore, Ill.
Pennsylvania Furnace & Iron Co., Warren, Pa.
Quiet Automatic Oil Burner Corp., Newark, N. J.
Ray Oil Burner Co., San Francisco, Calif.
Reif-Rexoil, Inc., Buffalo, N. Y.
Reznor Mfg. Co., Mercer, Pa.
Rosebraugh Co., W. W., Salem, Ore.
Round Oak Div., Peerless Corp., Dowagiac, Mich.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Surface Combustion Corp., Toledo, O.
Syncromatic Corp., Watertown, Wis.
Tjernlund Mfg. Co., St. Paul, Minn.
Tuck-Aire Furnace Co., San Francisco, Calif.
Waterman-Waterbury Co., The, Minneapolis, Minn.
Wesco Furnace Div., Northwest Foundry & Furnace Co., Portland, Ore.
York-Shipley, Inc., York, Pa.

FUSIBLE LINKS

See Links, Fusible

GAGE GLASSES

See Glasses, Gage

GAGE SETS, REFRIGERATION

Airserco Mfg. Co., Pittsburgh, Pa.
Henry Valve Co., Melrose Park, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Kent-Moore Organization, Inc., Warren, Mich.
Shank Co., Cyrus, Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh, Pa.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.

GAGE TESTERS

See Testers, Gage, Dead Weight

GAGES, AIR FILTER

Bacharach Industrial Instrument Co., Pittsburgh, Pa. (filter gauge)
Cambridge Filter Corp., Syracuse, N. Y.
Cleveland Controls, Inc., Cleveland, O.
Continental Air Filters, Inc., Louisville, Ky.
Defender Instrument and Regulator Co., Boody, Ill.
Dietz Co., Inc., Henry G., Long Island City, N. Y.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Hays Corp., Michigan City, Ind.
Meriam Instrument Co., The, Cleveland, O.
Mine Safety Appliances Co., Pittsburgh, Pa.
Pollen Ex Co., Chicago, Ill.
Trerice Co., H. O., Detroit, Mich.

Trimount Instrument Div., General Controls Co., Skokie, Ill.
Uehling Instrument Co., Paterson, N. J.

GAGES, INDICATING, DRAFT

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Canton Stoker Corp., Canton, O.
Cleveland Controls, Inc., Cleveland, O.
Defender Instrument and Regulator Co., Boody, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
General Controls Co., Glendale, Calif.
Hays Corp., Michigan City, Ind.
Hill & Co., E. Vernon, Lake Geneva, Wis.
King Engineering Corp., Ann Arbor, Mich.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Moore Products Co., Philadelphia, Pa.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Scientific Instrument Co., Detroit, Mich.
Shallcross Controls, Inc., Markesan, Wis.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
Uehling Instrument Co., Paterson, N. J.
Wallace & Tiernan, Inc., Belleville, N. J.

GAGES, INDICATING, PRESSURE

Acme Gauge & Instrument Co., Inc., Brooklyn, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, O.
Binks Mfg. Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Cameron Iron Works, Inc., Houston, Tex.
Canton Stoker Corp., Canton, O.
Cleveland Controls, Inc., Cleveland, O.
Crosby Valve & Gage Co., Wrentham, Mass.
Defender Instrument and Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Dillon & Co., Inc., W. C., Van Nuys, Calif. (mechanical)
Dunham-Bush, Inc., West Hartford, Conn.
Dwyer Mfg. Co., F. W., Michigan City, Ind
Eclipse Fuel Engineering Co., Rockford, Ill.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Gardner-Denver Co., Quincy, Ill.
General Blower Co., Philadelphia, Pa.
General Controls Co., Glendale, Calif.
Hastings-Raydist, Inc., Hampton, Va.
Hays Corp., Michigan City, Ind.
Helicoid Gage Div., American Chain & Cable Co., Inc., Bridgeport, Conn.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Hubbell Corp., Mundelein, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Korfund Co., Inc., Westbury, L. I., N. Y.
Kunkle Valve Co., Ft. Wayne, Ind.
Longergan Co., J. E., Philadelphia, Pa.
Madden Brass Products Co., Aurora, Ill.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Modern Engineering Co., St. Louis, Mo.
Moore Products Co., Philadelphia, Pa.
New York Air Valve Corp., Brooklyn, N. Y.
Norden-Ketay Corp., Instrument & Systems Div., Milford, Conn.
Owatonna Tool Co., Owatonna, Minn. (Hydraulic)
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Pure Carbonic Co., Div. of Air Reduction Co., Inc., New York, N. Y. (carbon dioxide)
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Research Vacuum Supply Co., Chicago, Ill.
Robinair Mfg. Corp., Montpelier, O.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Scientific Instruments Co., Detroit, Mich.
Shallcross Controls, Inc., Markesan, Wis.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Uehling Instrument Co., Paterson, N. J.
United Instrument Co., Brooklyn, N. Y.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Vacuum-Electronics Corp., Plainview, L. I., N. Y.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Wallace & Tiernan Inc., Belleville, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.

GAGES, INDICATING, VACUUM

Acme Gauge & Instrument Co., Inc., Brooklyn, N. Y.
Airserco Mfg. Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Cleveland Controls, Inc., Cleveland, O.
Crosby Valve & Gage Co., Wrentham, Mass.
Defender Instrument and Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Dole Valve Co., The, Morton Grove, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Eclipse Fuel Engineering Co., Rockford, Ill.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hastings-Raydist, Inc., Hampton, Va.
Helicoid Gage Div., American Chain & Cable Co., Inc., Bridgeport, Conn.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Hubbell Corp., Mundelein, Ill.
Imperial-Eastman, Chicago, Ill.
Kinney Vacuum Div., The New York Air Brake Co., Boston, Mass.
Kunkle Valve Co., Ft. Wayne, Ind.
Longergan Co., J. E., Philadelphia, Pa.
Madden Brass Products Co., Aurora, Ill.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
New York Air Valve Corp., Brooklyn, N. Y.
Norden-Ketay Corp., Instrument and Systems Div., Milford, Conn.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Research Vacuum Supply Co., Chicago, Ill.
Robinair Mfg. Corp., Montpelier, O.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Scientific Instrument Co., Detroit, Mich.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
Uehling Instrument Co., Paterson, N. J.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Vacuum-Electronics Corp., Plainview, L. I., N. Y.
Wallace & Tiernan Inc., Belleville, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.

GAGES, LIQUID LEVEL

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
Alloy Steel Products Co., Linden, N. J. (Stainless steel)
Automatic Control Co., St. Paul, Minn.
Bailey Meter Co., Cleveland, O.
Barclay, Inc., Robert, Chicago, Ill.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bristol Co., The, Waterbury, Conn.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Defender Instrument and Regulator Co., Boody, Ill.
Diamond Power Specialty Corp., Lancaster, O.
Ernst Water Column & Gauge Co., Livingston, N. J.
Fine Products Co., Berwyn, Ill.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Frick Co., Waynesboro, Pa.
General Controls Co., Glendale, Calif.
Gilbert & Barker Mfg. Co., West Springfield, Mass.
Hays Corp., Michigan City, Ind.
Henry Valve Co., Melrose Park, Ill.
Infilco, Inc., Tucson, Ariz.
Instruments, Inc., Tulsa, Okla.
Keckley Co., O. C., Skokie, Ill.
King Engineering Corp., Ann Arbor, Mich.
Krueger Sentry Gauge Co., Green Bay, Wis.
Liquidometer Corp., Long Island City, N. Y.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Mar-Coil Heater Co., Union, N. J.
Meriam Instrument Co., The, Cleveland, O.
Milton Roy Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
New York Air Valve Corp., Brooklyn, N. Y.
Norden-Ketay Corp., Instrument and Systems Div., Milford, Conn.
Oil Equipment Mfg. Corp., New Haven, Conn.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Petrometer Corp., Long Island City, N. Y.
Phillips & Co., H. A., Chicago, Ill.
Powell Co., Wm. Cincinnati, O.
Reliance Gauge Column Co., Cleveland, O.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Republic Mfg. Co., Cleveland, O.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Scientific Instrument Co., Detroit, Mich.
Shank Co., Cyrus, Chicago, Ill.
Simplex Valve & Meter Co., Lancaster, Pa.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Strahman Valves, Inc., Florham Park, N. J.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Swift Lubricator Co., Elmira, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
Texas Instruments, Inc., Houston, Tex.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
Uehling Instrument Co., Paterson, N. J.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Wallace & Tiernan Inc., Belleville, N. J.
Williams Gauge Co., Inc., The, Pittsburgh, Pa. (water)
Yarnall-Waring Co., Philadelphia, Pa.
York Div., Borg-Warner Corp., York, Pa.

GAGES, OIL BURNER ELECTRODES

Scully Signal Co., Melrose, Mass.

GAGES, OIL TANK

Applied Mechanics Co., Boston, Mass.
Barclay, Inc., Robert, Chicago, Ill.
Boston Machine Works Co., Lynn, Mass.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Instruments, Inc., Tulsa, Okla.
King Engineering Corp., Ann Arbor, Mich.
Krueger Sentry Gauge Co., Green Bay, Wis.
Liquidometer Corp., Long Island City, N. Y.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mar-Coil Heater Co., Union, N. J.
Meriam Instrument Co., The, Cleveland, O.

Milton Roy Co., Philadelphia, Pa.
Morrison Brothers Co., Dubuque, Ia.
Oil Equipment Mfg. Corp., New Haven, Conn.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Petrometer Corp., Long Island City, N. Y.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Scully Signal Co., Melrose, Mass.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
Uehling Instrument Co., Paterson, N. J.
Viking Pump Co., Cedar Falls, Ia.

GAGES, PIPE

A.C.M.I. Borescope Div., American Cystoscope Makers, Inc., Pelham Manor, N. Y. (internal borescope)
Branson Instruments, Inc., Stamford, Conn.
Dayton Rogers Mfg. Co., Minneapolis, Minn.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass. (thread)
Greer Hydraulics, Inc., Los Angeles, Calif.
Threadwell Tap & Die Co., Greenfield, Mass.
Three Point Industries, Evanston, Ill.

GAGES, PIPE BENDING

Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.

GALVANIZED SHEETS

See Sheets, Steel, Galvanized

GALVANNEALED SHEETS

See Sheets, Steel, Galvannealed

GARAGE VENTILATION FITTINGS

See Fittings, Exhaust, Garage, for Attaching Car Exhaust Pipe

GAS BURNER FLUE SPILLAGE SWITCH

See Switches, Flue Spillage, for Shutting Off Gas Burner

GAS BURNERS

See Burners, Gas

GAS ENGINES

See Engines, Gas

GAS FIRED RADIATORS

See Radiators, Gas Fired

GAS PRESSURE REGULATORS

See Regulators, Pressure, Gas

GAS VENT AND FLUE PIPE

See Pipe and Fittings, Gas Vent and Flue

GAS VOLUME METERS

See Meters, Volume, Air and Gas

GASKETS

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Akron Metallic Gasket Co., Akron, O.
Alasco Rubber & Plastics Corp., San Bruno, Calif.
Allpax Co., Inc., Mamaroneck, N. Y.
Alpha Metals, Inc., Jersey City, N. J.
American Felt Co., Glenville, Conn.
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Anchor Packing Co., Philadelphia, Pa. (Asbestos)
Andrew Parts Mfg. Co., Long Island City, N. Y.
Armstrong Cork Co., Lancaster, Pa. (Cork & cork composition)
Belmont Packing & Rubber Co., Philadelphia, Pa.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y. (Lead)
Brady Co., W. H., Milwaukee, Wis.
Cameron Iron Works, Inc., Houston, Tex.
Chase Brass & Copper Co., Waterbury, Conn. (Brass and copper)
Chesterton Co., A. W., Everett, Mass.
Chicago Gasket Co., Chicago, Ill.
Chicago-Wilcox Mfg. Co., Chicago, Ill.
Continental-Diamond Fibre Corp., Newark, Del. (fibre)
Connecticut Hard Rubber Co., New Haven, Conn. (rubber)
Continental Rubber Wks., Erie, Pa.
Crane Co., Chicago, Ill.
Crane Packing Co., Morton Grove, Ill.
Darcoid Co., Inc., New York, N. Y. (Asbestos)
Division Lead Co., Summit, Ill. (lead)
Durabla Mfg. Co., New York, N. Y. (Asbestos fibre)
Durable Rubber Products, Chicago, Ill. (rubber)
Ernst Water Column & Gauge Co., Livingston, N. J.
Excelsior Leather Washer Mfg. Co., Rockford, Ill. (leather)
Felt Products Mfg. Co., Skokie, Ill.
Felters Company, The, Boston, Mass. (felt)
Flexrock Co., Philadelphia, Pa.
Garlock Inc., Palmyra, N. Y.
General Tire & Rubber Co., Akron, O.
Goodall Rubber Co., Trenton, N. J.
Goodrich Co., B. F., Shelton, Conn.
Goodrich Industrial Products Co., B. F., Akron, O. (rubber)
Goodyear Tire & Rubber Co., Akron, O.
Grant Wilson, Inc., Chicago, Ill. (asbestos)
Graton & Knight Co., Worcester, Mass. (Leather)
Greene, Tweed & Co., North Wales, Pa.
Hamilton Kent Mfg. Co., Kent, O. (for concrete pipe)
Hewitt-Robins, Inc., Stamford, Conn.
Houghton & Co., E. F., Philadelphia, Pa.
Jarrow Products, Inc., Chicago, Ill.
Johns-Manville Corp., New York, N. Y.
L M R Engineering Corp., St. Louis, Mo. (plastic grommet where piping passes through panels)
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
McCord Corp., Detroit, Mich.
Mercer Rubber Co., Hamilton Sq., N. J.
Metallo Gasket Co., New Brunswick, N. J. (Metal, metal asbestos)
Mic-Lin Co., Maple Shade, N. J.
Mortell Co., J. W., Kankakee, Ill.
National Lead Co., New York, N. Y. (lead)
Neff-Perkins Co., Painesville, O.
New York Belting & Packing Co., Passaic, N. J.
Nicolet Industries, Inc., Florham Park, N. J. (asbestos)
O.T.M. Corp., Houston, Tex.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Parker Seal Co., Div. of Parker-Hannifiin Corp., Cleveland, O.
Products Research Co., Burbank, Calif.
Raybestos-Manhattan, Inc., Passaic, N. J. (Rubber and **asbestos)**
Rhopac, Inc., Skokie, Ill. (all types — non **metallic)**
Rubatex Div., Great American Industries, Inc., Bedford, Va
Saran Lined Pipe Co., Ferndale, Mich.
Schieren Co., Chas. A., Camden, N. J.
Stalwart Rubber Co., The, Bedford, O. (rubber)
Stokes Molded Products, Div. of The Electric Storage Battery Co., Trenton, N. J. (Hard rubber)
Tankit Co., The, Newark, N. J.
Technical Ply-Woods Sales, Chicago, Ill.
Tube Turns Plastics, Inc., Louisville, Ky. (for UPVC pipe)
United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J.
United States Rubber Co., New York, N. Y.
United States Stoneware Co., New York, N. Y.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O. (plastic)
Watsco, Inc., Hialeah, Fla. (compressor)
Western Felt Wks., Chicago, Ill. (Felt)
Zimmerman Packing, Cincinnati, O. (also gasket cutters)

GASOLINE FIRED HEATERS

See Heaters, Gasoline Fired

GAS VENT AND FLUE PIPE AND FITTINGS

See Pipe and Fittings, Gas Vent and Flue

GATES, BLAST

Allington & Curtis Mfg. Co., Saginaw, Mich.
Berger Bros. Co., Philadelphia, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Clarage Fan Co., Kalamazoo, Mich.
Day Co., The, Minneapolis, Minn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Ft. Worth Steel & Machinery Co., Ft. Worth, Tex.
Goethel Sheet Metal Works, Inc., Alfred, Milwaukee, Wis.
Industrial Plastic Fabricators, Norwood, Mass. (PVC and polyethylene)
Kirk & Blum Mfg. Co., Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.
Schurs Burner & Equipment, Inc., South Gate, Calif.
Spencer Turbine Co., Hartford, Conn.
Winkler & Sons, Inc., A. E., Milwaukee, Wis.

GATES, LIFT, FOR TRUCKS

Anthony Company, Streator, Ill.

GEAR-MOTORS

Abart Gear & Machine Co., Chicago, Ill.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Allis Co., Louis, The, Milwaukee, Wis.
Boston Gear Works, Quincy, Mass.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Century Electric Co., St. Louis, Mo.
Doerr Electric Corp., Cedarburg, Wis.
Electro-Dynamic Div., General Dynamics Corp., Bayonne, N. J.
Elliott Co., Jeannette, Pa.
Falk Corp., Milwaukee, Wis.
Hewitt-Robins, Inc., Stamford, Conn.
Howard Industries, Inc., Racine, Wis.
Howell Electric Motors Co., Detroit, Mich.
Janette Mfg. Co., Morton Grove, Ill.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich. (hydraulic)
Lima Electric Motor Co., Inc., The, Lima, O.
Link-Belt Co., Chicago, Ill.
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Philadelphia Gear Corp., King of Prussia, Pa.
Reliance Electric & Engineering Co., Cleveland, O.
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.
U.S. Electrical Motors, Inc., Los Angeles, Calif.
Wagner Electric Corp., St. Louis, Mo.
Westinghouse Electric Corp., Pittsburgh, Pa.

GENERATORS, ELECTRIC PORTABLE, ENGINE DRIVEN

(specifically designed for supplying power to power tools)
Caterpillar Tractor Co., Peoria, Ill.
Consolidated Diesel Electric Corp., Stamford, Conn.
Electric Machinery Mfg. Co., Minneapolis, Minn.
Hobart Bros. Co., Troy, O.
Howard Industries, Inc., Racine, Wis.
Kato Engineering Co., Mankato, Minn.
Marathon Electric Mfg. Corp., Wausau, Wis.
Onan & Sons, Inc., D. W., Minneapolis, Minn.
Thor Power Tool Co., Aurora, Ill.

GENERATORS, STEAM, ELECTRIC (Electrically "Fired" Boilers)

Appliance Bldg. Co., Inc., Seattle, Wash.
Hill Diesel Engine Corp., Lansing, Mich.
Lattner Mfg. Co., P. M., Cedar Rapids, Ia.
Pantex Mfg. Corp., Pawtucket, R. I.
Precision Parts Corp., Nashville, Tenn.
Tejax Engineering Corp., Pawtucket, R. I.

GLASS, HEAT ABSORBING

See Windows, Heat Insulating

GLASS PIPE

See Pipe, Glass

GLASSES, GAGE

Associated Valve Co., North Wales, Pa.
Chesterton Co., A. W., Everett, Mass.
Chicago Specialty Mfg. Co., Chicago, Ill.
Corning Glass Works, Corning, N. Y.
Defender Instrument & Regulator Co., Boody, Ill.
Diamond Power Specialty Corp., Lancaster, O.
Ernst Water Column & Gauge Co., Livingston, N. J.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Libbey-Owens-Ford Glass Co., Toledo, O.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
New York Air Valve Corp., Brooklyn, N. Y.
OPW Corp., Cincinnati, O.
Penberty Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Reliance Gauge Column Co., Cleveland, O.
Sarco Co., Inc., New York, N. Y.
Scientific Instrument Co., Detroit, Mich.
Shank Co., Cyrus, Chicago, Ill.
Strahman Valves, Inc., Florham Park, N. J.
Swift Lubricator Co., The, Elmira, N. Y.
Uehling Instrument Co., Paterson, N. J.
Vilter Mfg. Co., The, Milwaukee, Wis.

GLASSES, SIGHT, FOR PIPE LINES

Allin Mfg. Co., Chicago, Ill.
Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Chesterton Co., A. W., Everett, Mass.
Corning Glass Works, Corning, N. Y.
Ernst Water Column & Gauge Co., Livingston, N. J.
Fischer & Porter Co., Warminster, Pa.
Henry Valve Co., Melrose Park, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Libbey-Owens-Ford Glass Co., Toledo, O.
McIntire Co., The, Livingston, N. J.
Mueller Brass Co., Port Huron, Mich.
OPW-Jordan Corp., Cincinnati, O.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Remco, Inc., Zelienople, Pa. (for refrigerant lines)
Sarco Co., Inc., New York, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Instrument Co., Detroit, Mich.
Sporlan Valve Co., St. Louis, Mo.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Swift Lubricator Co., The, Elmira, N. Y.

GLOBE VALVES

See Valves, Globe

GLYCOL VAPORIZERS

See Units, Sterilizing, Air

GOVERNORS, PUMP

Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Burrows Mfg. Co., F. A., York, Pa.
Cash Co., A. W., Decatur, Ill.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Schade Valve Mfg. Co., Philadelphia, Pa.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., Cleveland, O.
Staples & Pfeiffer, San Francisco, Calif.
Synchro-Start Products, Inc., Skokie, Ill.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.

GRILLES

See also Diffusers; Panels, Perforated, for Air Diffusion; Registers

A. & A. Register Co., Cleveland, O.
A-J Mfg. Co., Kansas City, Mo.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Air Distribution Products Co., Los Angeles, Calif.
Air-Factors, Inc., Covina, Calif.
AirGuide Plastics Corp., Miami, Fla. (molded nylon)
Altorr Mfg. Co., Dallas, Tex.
American Warming & Ventilating Co., Toledo, O.
Auer Register Co., Cleveland, O.
Austin Engineering & Mfg. Co., Inc., Ysleta, Tex.
Bahnson Co., Winston-Salem, N. C.
Barber-Colman Co., Rockford, Ill.
Beckley Perforating Co., Garwood, N. J.
Carnes Corp., Verona, Wis.
Central Iron & Wire Works, Des Moines, Ia.
Char-Gale Mfg. Co., Minneapolis, Minn.
Connor Engineering Corp., Danbury, Conn.
Controlair Mfg. Co., Los Angeles, Calif.
Corbman Bros., Inc., Philadelphia, Pa.
Diamond Mfg. Co., Wyoming, Pa.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Erdle Perforating Co., Rochester, N. Y.
Federal Seaboard Terra Cotta Corp., New York, N. Y.
General Air Products Corp., Cedar Grove, N. J.
Harrington & King Perforating Co., Inc., Chicago, Ill.
Hart & Cooley Mfg. Co., Holland, Mich.
Hendrick Mfg. Co., Carbondale, Pa.
Independent Register Co., Cleveland, O.
International Mfg. Co., Oklahoma City, Okla.
Krueger Air Conditioning Corp., Tucson, Ariz.
Lenly Mfg. Co., Inc., Los Angeles, Calif.
Lima Register Co., Lima, O.
Manhattan Perforated Metal Co., Inc., Long Island City, N. Y.
Metal Industries, Inc., Clearwater, Fla.
Midco Register Corp., St. Paul, Minn.
Mundt & Sons, Charles, Jersey City, N. J.
Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Robertson Co., H. H., Pittsburgh, Pa.
Rock Island Register Co., Rock Island, Ill.
Smith Co., J. B., Philadelphia, Pa.
Standard Stamping & Perforating Co., Chicago, Ill.
Thermotank, Inc., Air Products Div., Detroit, Mich.
Titus Mfg. Corp., Waterloo, Iowa.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.
Viking Mfg. Corp., Cleveland, O.
Waterloo Register Co., Inc., Waterloo, Ia.
Western Wire & Iron Works, Inc., Chicago, Ill. (metal)
Wilson, Inc., Thomas C., Long Island City, N. Y.
Young Regulator Co., Cleveland, O.

GRILLES, DOOR

Air Control Products Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
A-J Mfg. Co., Kansas City, Mo.
Auer Register Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Construction Specialties, Inc., Cranford, N. J.
General Air Products Corp., Cedar Grove, N. J.
Hart & Cooley Mfg. Co., Holland, Mich.
Independent Register Co., Cleveland, O.
Lima Register Co., Lima, O.
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Universal Diffuser Corp., Tuckahoe, N. Y.
Ventilouvre Co., Inc., The, Marietta, O.
Waterloo Register Co., Inc., Waterloo, Ia.
Young Regulator Co., Cleveland, O.

GRINDERS AND GRINDING WHEELS, WELD

Airetool Mfg. Co., Springfield, O.
Albertson & Co., Inc., Sioux City, Ia.
Baldor Electric Co., St. Louis, Mo.
Black & Decker Mfg. Co., The, Towson, Md.
Buckeye Tools Corp., Dayton, O.
Chicago Pneumatic Tool Co., New York, N. Y.
Cincinnati Electrical Tool Co., The, Cincinnati, O.
Gardner-Denver Co., Quincy, Ill.
Milwaukee Electric Tool Corp., Milwaukee, Wis.
Norton Co., Worcester, Mass.
Portable Electrical Tools, Inc., Geneva, Ill.
Porter-Cable Machine Co., Syracuse, N. Y.
Raybestos-Manhattan, Inc., Passaic, N. J.
Remington Arms Co., Inc., Bridgeport, Conn.
Roto Tool Co., Cleveland, O.
Skil Corp., Chicago, Ill.
Speedway Mfg. Co., Div. of Thor Power Tool Co., La Grange Park, Ill.
Stanley Electric Tools Div., The Stanley Works, New Britain, Conn.
Thor Power Tool Co., Aurora, Ill.
United States Electrical Tool Co., Cincinnati, O.
Wachs Co., E. H., The, Chicago, Ill.

GROOVERS, PLASTER, ELECTRIC, PORTABLE

Skil Corp., Chicago, Ill.
Wodack Electric Tool Corp., Chicago, Ill.

GUARDS, THERMOSTAT, TO PREVENT TAMPERING

Barber-Colman Co., Rockford, Ill.
Better Engineered Controls, Los Angeles, Calif.
Erdle Perforating Co., Rochester, N. Y.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.

GUNS, POTS AND CANDLES, SMOKE AND SMUDGE, FOR TESTING AIR MOVEMENT

Air Control Products, Inc., Coopersville, Mich.
Design Engineers, Rockford, Ill.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Kilgore, Inc., International Flare-Signal Div., Westerville, O.
Mine Safety Appliances Co., Pittsburgh, Pa.

HAMMERS, ELECTRIC, PORTABLE

Black & Decker Mfg. Co., The, Towson, Md.
Hamer-Dril Co., New York, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Millers Falls Co., Greenfield, Mass.
Milwaukee Electric Tool Corp., Milwaukee, Wis.
Modern Mfg. Co., Inc., Willow Grove, Pa.
Phillips Drill Co., Michigan City, Ind.
Port City Machine & Tool Co., Muskegon, Mich. (Pittsburgh lock)
Porter-Cable Machine Co., Syracuse, N. Y.
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., New Haven, Conn.
Rotor Tool Co., Cleveland, O.
Skil Corp., Chicago, Ill.
Stanley Electric Tools Div., The Stanley Works, New Britain, Conn.
Super Slugger Co., Bedford, O.
Syntron Co., Homer City, Pa.
Thor Power Tool Co., Aurora, Ill.
Wodack Electric Tool Corp., Chicago, Ill.

HAND SHEARS

See Shears and Snips, Hand

HANGERS OR BRACKETS, RADIATOR

Arjac Products, Inc., Rochester, N. Y.
Carpenter & Paterson, Inc., Cambridge, Mass.
Crawford Co., Chicago, Ill.
Elcen Metal Products Co., Franklin Park, Ill.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Gateway Engineering Co., Chicago, Ill.
Hartmann Co., Chas., Brooklyn, N. Y.
Healy Ruff Co., St. Paul, Minn.
Jennison Co., The, Fitchburg, Mass. (Adjustable radiator foot rest)
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Modern Hanger Corp., The, Cleveland, O.

National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Rittling Corp., The, Buffalo, N. Y.
Unistrut Products Co., Chicago, Ill.

HANGERS, PIPE, CONSTANT SUPPORT (SPRING)

Basic Engineers, Inc., Sharpsburg, Pa.
Bergen Pipesupport Corp., New York, N. Y.
Elcen Metal Products Co., Franklin Park, Ill.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J. (malleable iron; cast iron; steel)
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.

HANGERS AND SUPPORTS, DUCT

Acme Mfg. Co., Philadelphia, Pa.
Adelta Mfg. Co., Inc., Philadelphia, Pa. (galvanized)
Bergen Pipesupport Corp., New York, N. Y. (variable spring & constant supports)
Corbman Bros., Inc., Philadelphia, Pa.
Elcen Metal Products Co., Franklin Park, Ill.
Excelsior Steel Furnace Co., The, Chicago, Ill.
Finn & Co., Inc., T. R., Hawthorne, N. J. (vibration)
Hall Co., Windsor Locks, Conn.
Hexdall Co., A. M., Morris, Ill. (square duct)
Inland Steel Products Co., Milwaukee, Wis. (galvanized)
Korfund Co., Inc., Westbury, L. I., N. Y.
Maurlee Co., Inc., Woodbury Heights, N. J.
Mine Safety Appliances Co., Velocity Power Tool Dept., Pittsburgh, Pa. (cartridge stud driver)
Modern Hanger Corp., The, Cleveland, O.
Moore Inc., Goodloe E., Danville, Ill.
Mueller Brass Co., Port Huron, Mich (perforated strap)
Omark Industries, Inc., Portland, Ore.
Phillips Drill Co., Michigan City, Ind. (self-drilling expansion shells)
Redi-Bolt, Inc., East Chicago, Ind. (continuous threaded steel rod)
Remington Arms Co., Inc., Bridgeport, Conn. (stud, pin and threaded types)
Steel City Electric Co., Pittsburgh, Pa. (trapeze)
Unistrut Products Co., Chicago, Ill.
Western Wire Products Co., St. Louis, Mo.
Williamson Co., Cincinnati, O. (galvanized)

HANGERS AND SUPPORTS, PIPE

Acme Steel Co., Chicago, Ill. (slotted angle)
Align-O Pipe Guide Co., Upper Darby, Pa.
American Tube & Controls, Inc., West Warwick, R. I. (copper tube)
Automatic Sprinkler Corp. of America, Auto-Grip Div., Youngstown, O.
Basic Engineers Inc., Sharpsburg, Pa.
Bergen Pipesupport Corp., New York, N. Y. (variable spring, constant support and hanger assemblies)
Binkley Bolted Framing Sales Co., Wright City, Mo.
Blaw Knox Co., Power Piping Div., Pittsburgh, Pa. (spring and solid)
Carpenter & Paterson, Inc., Cambridge, Mass.
Chase Brass & Copper Co., Waterbury, Conn. (copper strap)
Crawford Co., Chicago, Ill.
Elcen Metal Products Co., Franklin Park, Ill.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J. (malleable iron; cast iron; steel)
Finn & Co., Inc., T.R., Hawthorne, N. J. (Rubber-in-shear & steel spring)
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill. (pipe guides and anchors)
Frick Co., Waynesboro, Pa.
Gateway Engineering Co., Chicago, Ill.
General Fittings Co., East Greenwich, R. I. (strap hangers)
Gerrard & Co., A. J., Des Plaines, Ill. (strap)
Globe Products, Huppower Div., Hupp Corp., Detroit, Mich. (clevis swivel)
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Handy Angle Div., The Lugall Co., Haverford, Pa.
Holub Industries, Inc., Sycamore, Ill. (steel and plastic)
Industrial Sheet Metal Work, Chicago, Ill.
Industrial Tubular Equipment Co., Div. of Idaho Maryland Industries, Inc., North Hollywood, Calif.
Korfund Co., Inc., Westbury, Long Island, N. Y.
L. K. Iron Works, New York, N. Y.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y. (spring hangers and roller hangers)
McIntire Co., The, Livingston, N. J.
Minerallac Electric Co., Chicago, Ill.
Mine Safety Appliances Co., Velocity Power Tool Dept., Pittsburgh, Pa. (cartridge stud driver)
Modern Hanger Corp., The, Cleveland, O.
Moore Inc., Goodloe E., Danville, Ill.
Mult-A-Frame Corp., Detroit, Mich.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
National Valve & Mfg. Co., Pittsburgh, Pa. (counterpoise)
Nibco, Inc., Elkhart, Ind. (copper tube)
Omark Industries, Inc., Portland, Ore.
Paine Co., Addison, Ill. (snug fit wire pipe hooks; pipe straps; rings and bolts; perforated hanger iron)
Phillips Drill Co., Michigan City, Ind. (self-drilling expansion shells)
Pipeline Coatings & Engineering Co., Los Angeles, Calif.
Piping Specialties, Inc., New York, N. Y. (anchor and guide for expansion joints; spring and all types)
Power Strut, Inc., Framingham, Mass.
Producto Electric Corp., New York, N. Y.
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., New Haven, Conn. (conduit clips)
Rector Mineral Trading Corp., New York, N. Y.
Redi-Bolt, Inc., East Chicago, Ind. (continuous threaded steel rod)
Remington Arms Co., Inc., Bridgeport, Conn. (stud, threaded type)
Republic Steel Corp., Cleveland, O. (pressed steel inserts)
Ritter Pattern & Casting Co., New York, N. Y. (jack type adjustable tunnel stanchion and tunnel stanchion brackets with U bolts)
Rockwood Sprinkler Co., Worcester, Mass.
Saussé & Co., M. W., Los Angeles, Calif. (cork, rubber-in-shear, and spring)
Schaub Engineering Co., Fred H., Downers Grove, Ill. (pipe stands)
Steel City Electric Co., Pittsburgh, Pa. (clamps, clips, rollers, hangers)
Stic-Klip Mfg. Co., Inc., Cambridge, Mass. for ¼ and ¾ in. diam. pipe and tubing)
Unistrut Products Co., Chicago, Ill.
Vibration Mountings & Controls, Inc., Corona, N. Y. (vibration hangers)
Western Wire Products Co., St. Louis, Mo. (wire pipe hooks and perforated hanger iron; copper tubing hanger & slings; galvanized and copper coated pipe straps)
Williamson, Inc., T. D., Tulsa, Okla. (cradles)

HARD RUBBER PIPE AND FITTINGS

See Pipe, Hard Rubber; Fittings, Pipe, Hard Rubber

HARDWARE

See Parts for Heating and Air Conditioning Equipment

HEADERS, PIPE, WELDED

Albert Pipe Supply Co., Inc., Brooklyn, N. Y.
Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O
Atlantic Pipe Bending & Fabricating Corp., Moonachie, N. J.
Biggs Boiler Wks. Co., The, E. Akron, O.
Blaw Knox Co., Power Piping Div., Pittsburgh, Pa.
Bros Inc., Minneapolis, Minn.
Buffalo Tank Corp., Dunellen, N. J.
Chicago Nipple Mfg. Co., Oak Park, Ill.
Cobra Pipe Supply & Coil Co., Inc., Elmwood, Conn.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Crane Co., Chicago, Ill.
Crotty Mfg. Corp., Flushing, Long Island, N. Y.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Fibercast Co., Sand Spring, Okla.
Gray Tool Co., Houston, Tex.
Grinnell Co., Inc., Providence, R. I.
Heat & Power Corp., Baltimore, Md.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Kellogg Co., M. W., The, New York, N. Y.
Ladish Co., Cudahy, Wis.
Marquette Coppersmithing Co., Philadelphia, Pa.
Midwest Piping Co., Inc., St. Louis, Mo.
Mitchell & Co., Inc., W. K., Philadelphia, Pa.
National Pipe Bending Co., New Haven, Conn.
National Valve & Mfg. Co., Pittsburgh, Pa.
Naylor Pipe Co., Chicago, Ill.
Ohio Pipe Bending & Machine Co., Cleveland, O.
Philadelphia Pipe Bending Co., Philadelphia.
Pittsburgh Piping & Equipment Co., Pittsburgh, Pa.
Pittsburgh Standard Products Co., Verona, Pa.
Portland Copper and Tank Works, Inc., South Portland, Me.
Reco Products Div., Recony Corp., New York, N. Y.
Red Jacket Co., Inc., Carnegie, Pa.
Rempe Co., Chicago, Ill.
Richmond Engineering Co., Richmond, Va.
Ric-wiL, Inc., Barberton, O.
Roessing Mfg. Co., Pittsburgh, Pa.
Sales Div., Murray W., Detroit, Mich.
Shaw Co., Benjamin F., Wilmington, Del.
Shaw-Kendall Engineering Co., Toledo, O.
Star Tubular Products Co., Chicago, Ill.
Taylor Engineering Corp., Detroit, Mich.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Vilter Mfg. Co., Milwaukee, Wis.
Walworth Co., New York, N. Y.
Western Piping & Engineering Co., Inc., San Francisco, Calif.
Whitlock Mfg. Co., W. Hartford, Conn.

HEADS, EXHAUST, FOR PIPE LINES

Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O
Canton Stoker Corp., Canton, O.
Centrifix Corp., Houston, Tex.
Cochrane Corp., Philadelphia, Pa.
Hoppes Mfg. Co., Inc., Springfield, O.
Wilson Engineering Corp., Chicago, Ill.
Wright-Austin Co., Detroit, Mich.

HEADS, SAFETY

Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Falls Industries, Inc., Solon, O.

HEADS, SPRINKLER, FOR FIRE PROTECTION

Fyr-Fyter Co., Dayton, O.
Grinnell Co., Inc., Providence, R. I.
Hodgman Mfg. Co., Inc., Taunton, Mass.
Raisler Corp., Grimes Sprinkler Div., New York, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.

HEAT EXCHANGERS

See Chillers, Water; Condensers, Refrigerating; Exchangers, Heat; Surface, Finned, Cooling; Surface, Finned, Heating

HEAT PUMP SWITCHING VALVES

See Valves, Switching, Heat Pump

HEAT PUMPS

See Unitary Air Conditioners, Year Around, Heat Pump (Reverse Refrigeration Cycle)

HEAT RECOVERY UNITS

See Units, Heat Recovery

HEAT REGENERATORS

See Units, Heat Recovery

HEATERS, AIR, DIRECT FIRED, COAL

For Furnaces for Central Plant Installation, EXCLUSIVELY for Duct Distribution of the Air, See the Listing Under Furnaces

American Furnace Co., St. Louis, Mo.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Jackson & Church Co., Saginaw, Mich.

MaGirl Foundry & Furnace Co., Bloomington, Ill.
Meyer Furnace Co., The, Peoria, Ill.
National Heater Co., Inc., St. Paul, Minn.
Rosebraugh Co., W. W., Salem, Ore.

HEATERS, AIR, DIRECT FIRED, COMBINATION GAS AND OIL

For Furnaces for Central Plant Installation, EXCLUSIVELY for Duct Distribution of the Air, See the Listing Under Furnaces

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
Arkos Mfg. Co., Detroit, Mich.
Campbell Co., E. K., Kansas City, Mo.
Chicago Steel Furnace Co., Elk Grove, Ill.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Drying Systems Co., Chicago, Ill.
Freeman Heating Div., Illinois Iron & Bolt Co., Carpentersville, Ill.
Inland Heater Corp., St. Paul, Minn.
Jackson & Church Co., Saginaw, Mich.
Johnson Heater Corp., Chelsea, Mass.
Lee Corp., Wilmington, Del.
Lennox Industries Inc., Marshalltown, Ia.
Lennox Industries Inc., Columbus, O.
MaGirl Foundry & Furnace Co., Bloomington, Ill.
Mammoth Industries, Inc., Minneapolis, Minn.
Miller-Church Industries, Inc., Eaton Rapids, Mich.
National Heater Co., Inc., St. Paul, Mich.
Newcomb-Detroit Co., Detroit, Mich.
Norwalk Air Conditioning Corp., S. Norwalk, Conn.
Todd Shipyards Corp., Products Div., Brooklyn, N. Y.

HEATERS, AIR, DIRECT FIRED, GAS, CENTRIFUGAL FAN TYPE

For Furnaces for Central Plant Installation, EXCLUSIVELY for Duct Distribution of the Air, See the Listing Under Furnaces

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
American Foundry & Furnace Co., Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
Arkla Air Conditioning Corp., Little Rock, Ark.
Arkos Mfg. Co., Detroit, Mich.
Auburn Burner Co., Auburn, Ind.
Besser Furnace and Air Conditioning Corp., Charlotte, N. C.
Burdett Mfg. Co., Chicago, Ill.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Elk Grove, Ill.
Consumer Products, Motor Wheel Corp., Lansing, Mich.
David-Ludwig Co., Detroit, Mich.
Dover Corp., Peerless Mfg. Div., Louisville.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Drying Systems Co., Chicago, Ill.
Fraser & Johnston Co., San Francisco, Calif.
Gaffers & Sattler, Los Angeles, Calif.
Hastings Air Control, Inc., Omaha, Nebr.
Hayes Furnace Mfg. & Supply Co., Torrance, Calif.
Inland Heater Corp., St. Paul, Minn.
Jackson & Church Co., Saginaw, Mich.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Jet-Heet, Inc., Englewood, N. J.
Johnson Heater Corp., Chelsea, Mass. (with and without ducts)
Kilbury Mfg. Co., Inc., Lawndale, Calif.
Lennox Industries Inc., Marshalltown, Ia.
MaGirl Foundry & Furnace Co., Bloomington, Ill.
Mammoth Industries, Inc., Minneapolis, Minn.
Mid-Continent Metal Products Co., Chicago.
Modine Mfg. Co., Racine, Wis.
Montag Inc., Portland, Ore.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National Heater Co., Inc., St. Paul, Minn.
Nesbitt, Inc., John J., Philadelphia, Pa.
Newcomb-Detroit Co., Detroit, Mich.
Norman Products Co., Inc., Columbus, O.
OverHead Heaters, Inc., Detroit, Mich.
Payne Company, La Puente, Calif.
Reznor Mfg. Co., Mercer, Pa.
Rockwell Co., W. S., Fairfield, Conn.
Sterlairco, Inc., Westfield, Mass.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Surface Combustion Corp., Toledo, O.
Tjernlund Mfg. Co., St. Paul, Minn.
Tuck-Aire Furnace Co., San Francisco, Calif.
U. S. Air Conditioning Corp., Delaware, O.
Young Radiator Co., Racine, Wis.

HEATERS, AIR, DIRECT FIRED, GAS, PORTABLE, FOR SPACE HEATING

(State capacity)

Aeroil Products Co., Inc., South Hackensack, N. J. (125,000 to 500,000 Btu per hr)
Albion Div., McGraw-Edison Co., Albion, Mich.
Arkos Mfg. Co., Detroit, Mich.
Bica Co., Girard, O. (50,000-85,000 Btu)
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Chicago Steel Furnace Co., Elk Grove, Ill.
Coleman Co., Inc., The, Wichita, Kans. (20,000 to 70,000 Btu per hr input)
Dearborn Stove Co., Dallas, Tex. (12,000 to 65,000 Btu per hr)
Insto-Gas Corp., Detroit, Mich. (up to 150,000 Btu per hr)
Johnson Heater Corp., Chelsea, Mass. (500,000 Btu per hr)
Lennox Industries Inc., Marshalltown, Ia.
Mammoth Industries, Inc., Minneapolis, Minn.
Miller-Church Industries, Inc., Eaton Rapids, Mich. (72,000 Btu per hr)
National Heater Co., Inc., St. Paul, Minn.
Siebring Mfg. Co., George, Ia.
Space-Ray-Corp., Charlotte, N. C. (50,000 to 100,000 Btu per hr)
Stow Mfg. Co., Binghamton, N. Y. (200,000 Btu per hr output)
Summit Products Co., Uniontown, Pa. (125,000 to 250,000 Btu)
Union Chill Mat Co., Saxonburg, Pa.
Vacuum Gas Burner Co., Olean, N. Y. (35,000 to 65,000 Btu per hr)
Weldit, Inc., Detroit, Mich. (100,000 Btu per hr; for LP Gas)

HEATERS, AIR, DIRECT-FIRED, GAS, SUSPENDED TYPE

Arkla Air Conditioning Corp., Little Rock, Ark.
Arkos Mfg. Co., Detroit, Mich.
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Day & Night Mfg. Co., LaPuente, Calif.
Inland Heater Corp., St. Paul, Minn.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Jet-Heet, Inc., Englewood, N. J.
Lennox Industries Inc., Marshalltown, Ia.
Mammoth Industries Inc., Minneapolis, Minn.
Meyer Furnace Co., Inc., Peoria, Ill.
Modine Mfg. Co., Racine, Wis.
Montag, Inc., Portland, Ore.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National Heater Co., Inc., St. Paul, Minn.
Nesbitt, Inc., John J., Philadelphia, Pa.
OverHead Heaters, Inc., Detroit, Mich.
Patten Co., J. V., Sycamore, Ill.
Payne Co., La Puente, Calif.
Reznor Mfg. Co., Mercer, Pa.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Syncromatic Corp., Watertown, Wis.
Tjernlund Mfg. Co., St. Paul, Minn.
Wanson Corp., Lewiston, Pa.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.
Williamson Co., The, Cincinnati, O.

HEATERS, AIR, DIRECT FIRED, OIL, FLOOR TYPE

For Furnaces for Central Plant Installation, EXCLUSIVELY for Duct Distribution of the Air, See the Listing Under Furnaces

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
American Foundry & Furnace Co., Bloomington, Ill.
Arkos Mfg. Co., Detroit, Mich.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chicago Steel Furnace Co., Elk Grove, Ill.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Drying Systems Co., Chicago, Ill.
Freeman Heating Div., Illinois Iron & Bolt Co., Carpentersville, Ill.
Gilbert & Barker Mfg. Co., West Springfield, Mass.
Inland Heater Corp., St. Paul, Minn.
Jackson & Church Co., Saginaw, Mich.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Jet-Heet, Inc., Englewood, N. J.
Johnson Heater Corp., Chelsea, Mass. (with and without ducts)
Lee Corp., Wilmington, Del.
Lennox Industries Inc., Marshalltown, Ia.
MaGirl Foundry & Furnace Co., Bloomington, Ill.
Mammoth Industries, Inc., Minneapolis, Minn.
Miller-Church Industries, Inc., Eaton Rapids, Mich.
National Heater Co., Inc., St. Paul, Minn.
Norwalk Air Conditioning Corp., S. Norwalk, Conn.
Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
Siebring Mfg. Co., George, Ia.
Tjernlund Mfg. Co., St. Paul, Minn.
Wanson Corp., Lewiston, Pa.
York-Shipley, Inc., York, Pa.

HEATERS, AIR, DIRECT FIRED, OIL, PORTABLE, FOR SPACE HEATING

Air Conditioning Engineering Co., Cambridge, Mass. (200,000; 285,000; 425,000 and 635,000 Btu)
Airtherm Mfg. Co., St. Louis, Mo. (400,000 to 2,000,000 Btu output per hr)
Albion Div., McGraw-Edison Co., Albion, Mich.
American Foundry & Furnace Co., Bloomington, Ill. (400,000-2,000,000 Btu per hr)
Arkos Mfg. Co., Detroit, Mich. (120,000 Btu per hr to 3,500,000 Btu per hr.)
Armstrong Furnace Co., Div. of National Union Electric Co., Columbus, O.
Auburn Burner Co., Auburn, Ind.
Campbell Heating Co., Des Moines, Ia. (Up to 3,150,000 Btu)
Cauhorn Distributing Co., Detroit, Mich. (190,000 Btu)
Chicago Steel Furnace Co., Elk Grove, Ill.
Coleman Co., Inc., The, Wichita, Kans. (35,000 to 75,000 Btu per hr output)
Emglo Corp., Johnstown, Pa.
Interstate Heater Mfg. Co., Denver, Colo. (80,000-180,000 Btu per hr)
Jackson & Church Co., Saginaw, Mich. (400,000 Btu — 2,000,000 Btu per hr output at Bonnet)
Johnson Heater Corp., Chelsea, Mass. (500,000 Btu)
Mammoth Industries, Inc., Minneapolis, Minn.
Master Vibrator Co., Dayton, O.
Miller-Church Industries, Inc., Eaton Rapids, Mich. (72,000 Btu per hr)
National Heater Co., Inc., St. Paul, Minn.
Quiet Automatic Oil Burner Corp., Newark, N. J.
Siebring Mfg. Co., George, Ia.
Silent Glow Oil Burner Co., Hartford, Conn. (100,000 - 1,000,000 Btu per hr)
Stow Mfg. Co., Binghamton, N. Y. (100,000 to 1,000,000 Btu per hr output)
Tjernlund Mfg. Co., St. Paul, Minn.
Wanson Corp., Lewiston, Pa. (200,000 Btu per hr)
Wood Co., John, Conshohocken, Pa.

HEATERS, AIR, DIRECT FIRED, OIL, SUSPENDED TYPE

For Furnaces for Central Plant Installation, EXCLUSIVELY for Duct Distribution of the Air, See the Listing Under Furnaces

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
American Furnace Co., St. Louis, Mo.

Arkos Mfg. Co., Detroit, Mich.
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Auburn Burner Co., Auburn, Ind.
Auburn Burner Co., Edgerton, O.
Bard Mfg. Co., Bryan, O.
Besser Furnace and Air Conditioning Corp., Charlotte, N. C.
Campbell Co., E. K., Kansas City, Mo.
Century Engineering Corp., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Elk Grove, Ill.
Cox Mfg. Co., Ridgeville, Ind.
Deico Appliance Div., General Motors Corp., Rochester, N. Y.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Freeman Heating Div., Illinois Iron & Bolt Co., Carpentersville, Ill.
General Automatic Products Corp., Baltimore, Md.
Gilbert & Barker Mfg. Co., West Springfield, Mass.
Inland Heater Corp., St. Paul, Minn.
Interstate Heater Mfg. Co., Denver, Colo.
Jackson & Church Co., Saginaw, Mich.
Jet-Heet, Inc., Englewood, N. J.
Johnson Heater Corp., Chelsea, Mass.
Kaustine Furnace & Tank Corp., Perry, N. Y.
Lee Corp., Wilmington, Del.
Lennox Industries Inc., Marshalltown, Ia.
Lennox Industries Inc., Columbus. O.
Mammoth Industries, Inc., Minneapolis, Minn.
Meyer Furnace Co., The, Peoria, Ill.
Montag Inc., Portland, Ore.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National Heater Co., Inc., St. Paul, Minn.
Olsen Mfg. Co., C. A., Elyria, O.
OverHead Heaters, Inc., Detroit, Mich.
Patten Co., J. V., Sycamore, Ill.
Silent Automatic Products, Cleveland, O.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Syncromatic Corp., Watertown, Wis.
Thermo-Products, Inc., North Judson, Ind.
Tjernlund Mfg. Co., St. Paul, Minn.
Tuttle Electric Products, Inc., Kirkland, Ill.
Viking Mfg. Corp., Cleveland, O.
Waterman-Waterbury Co., The, Minneapolis, Minn.
Weatherall Engineers, Inc., Providence, R. I.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
Williams Div., Eureka Williams Corp., Bloomington, Ill.
Williamson Co., Cincinnati, O.
York-Shipley, Inc., York, Pa.

HEATERS, CONVECTION

See Radiation, Convection Type

HEATERS, DUCT, ELECTRIC

Electrend Products Corp., St. Joseph, Mich.
Electric Heater Specialty Co., New York, N. Y.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Falcon Equipment Co., New Brighton, Pa.
General Electric Co., Air Conditioning Dept., Tyler, Tex.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Heatube Dept., Albion Div., McGraw-Edison Co., Albion, Mich.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Industrial Engineering & Equipment Co., St. Louis, Mo.
Kilbury Mfg. Co., Inc., Lawndale, Calif.
Lennox Industries Inc., Marshalltown, Ia.
Montgomery Bros., San Francisco, Calif.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Tenney Engineering, Inc., Newark, N. J.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles, Calif.
Trent, Inc., Philadelphia, Pa.
Vulcan Electric Co., Danvers, Mass.
Waage Electric, Inc., Kenilworth, N. J.
Wesco Furnace Div., Northwest Foundry & Furnace Co., Portland, Ore.
Wesix Electric Heater Co., San Francisco.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Williamson Co., The, Cincinnati, O.
Wilson Electric Furnace Co., Rossville, Ga.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg Co., Inc., Linden, N. J.

HEATERS, DUCT, GAS

Arkla Air Conditioning Corp., Little Rock, Ark.
Arkos Mfg. Co., Detroit, Mich.
Bryant Mfg. Co., Indianapolis, Ind.
Campbell Heating Co., Des Moines, Ia.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Elk Grove, Ill.
Day & Night Mfg. Co., La Puente, Calif.
Dearborn Stove Co., Dallas, Tex.
Dover Corp., Peerless Mfg. Div., Louisville, Ky.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Fedders Corp., Heating Div., Trenton, N. J.
Gaffers & Sattler, Los Angeles, Calif.
Hastings Air Control, Inc., Omaha, Nebr.
Hayes Furnace Mfg. & Supply Co., Torrance, Calif.
Inland Heater Corp., St. Paul, Minn.
Jackson & Church Co., Saginaw, Mich.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Johnson Heater Corp., Chelsea, Mass.
Kleer Kleen Mfg. Co., Hayward, Calif.
Lennox Industries Inc., Columbus, O.
Lennox Industries Inc., Marshalltown, Ia.
Mammoth Industries, Inc., Minneapolis, Minn.
Maxon Premix Burner Co., Muncie, Ind.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National Heater Co., Inc., St. Paul, Minn.
Nesbitt, Inc., John J., Philadelphia, Pa.
Norman Products Co., Inc., Columbus, O.
Olsen Mfg. Co., C. A., Elyria, O.
OverHead Heaters, Inc., Detroit, Mich.
Patten Co., J. V., Sycamore, Ill.
Payne Company, La Puente, Calif.
Reznor Mfg. Co., Mercer, Pa.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Sterlairco, Inc., Westfield, Mass.
Surface Combustion Corp., Toledo, O.
Thermo-Products, Inc., North Judson, Ind.
Tjernlund Mfg. Co., St. Paul, Minn.
Tuck-Aire Furnace Co., San Francisco, Calif.
U. S. Air Conditioning Corp., Delaware, O.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
Viking Mfg. Corp., Cleveland, O.
Williamson Co., The, Cincinnati, O.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

HEATERS, DUCT, OIL FIRED

Arkos Mfg. Co., Detroit, Mich.
Campbell Heating Co., Des Moines, Ia.
Century Engineering Corp., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Elk Grove, Ill.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Inland Heater Corp., St. Paul, Minn.
Interstate Heater Mfg. Co., Denver, Colo.
Jackson & Church Co., Saginaw, Mich.
Johnson Heater Corp., Chelsea, Mass.
Kleer Kleen Mfg. Co., Hayward, Calif.
Lennox Industries Inc., Marshalltown, Ia.
Mammoth Industries, Inc., Minneapolis, Minn.
National Heater Co., Inc., St. Paul, Minn.
Norwalk Air Conditioning Corp., S. Norwalk, Conn.
OverHead Heaters, Inc., Detroit, Mich.
Patten Co., J. V. Sycamore, Ill.
Republic Products Co., Philadelphia, Pa.
Thermo-Products, Inc., North Judson, Ind.
Tjernlund Mfg. Co., St. Paul, Minn.
Viking Mfg. Corp., Cleveland, O.
Williamson Co., The, Cincinnati, O.

HEATERS, ELECTRIC, OIL-HEATING, FOR PREVENTING FOAMING IN CRANKCASE COMPRESSOR OIL

Electrofilm, Inc., North Hollywood, Calif.
Electro-Therm, Inc., Silver Spring, Md.
Vulcan Electric Co., Danvers, Mass.
Wiegand Co., Edwin L., Pittsburgh, Pa.

HEATERS, FEEDWATER

See Deaerators

HEATERS, GASOLINE FIRED (FOR AIRCRAFT AND PORTABLE GROUND USE)

Coleman Co., Inc., The, Wichita, Ks.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
National Heater Co., Inc., St. Paul, Minn.
Perfection Div., Hupp Corp., Cleveland, O.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Surface Combustion Corp., Toledo, O.

HEATERS, INDIRECT, SUBMERGED

Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Alstrom Corp., The, New York, N. Y.
Bell & Gossett Co., Morton Grove, Ill.
Buxton Mfg. Co., Dover, N. J.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dean Products, Inc., Brooklyn, N. Y.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (graphite)
General Fittings Co., East Greenwich, R. I.
Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Heatube Dept., Albion Div., McGraw-Edison Co., Albion, Mich.
Killebrew Engineering Corp., St. Louis, Mo.
Lindy Heaters, Inc., Bronx, N. Y.
Newcomb-Detroit Co., Detroit, Mich. (gas)
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Richmond Engineering Co., Richmond, Va.
Sims Co., Erie, Pa.
Taco Heaters, Inc., Cranston, R. I.
Thermon Mfg. Co., Houston, Tex.
Water Tube Boiler & Tank Co., Chicago, Ill.
Western Blower Co., Seattle, Wash.
Yula Corp., Bronx, N. Y.

HEATERS, OIL

See Preheaters, Fuel Oil; Units, Fuel Oil, Heating, Pumping and Straining

HEATERS, OIL TANK, SUCTION BELL

Best Combustion Equipment Co., Inc., W. N., Little Ferry, N. J.
Brown Fintube Co., Elyria, O.
Cleaver-Brooks Co., Milwaukee, Wis.
Condenser Service & Engineering Co., Inc., Hoboken N. J.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Hauck Mfg. Co., Brooklyn, N. Y.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Manning & Lewis Engineering Co., Newark, N. J.
Old Dominion Iron & Steel Corp., Richmond, Va.
Richmond Engineering Co., Inc., Richmond, Va.
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.
Yula Corp., Bronx, N. Y.

HEATERS, RADIATION, FOR SUPPLYING HOT WATER RADIATION FROM STEAM BOILER

Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
Alstrom Corp., New York, N. Y.
Bell & Gossett Co., Morton Grove, Ill.
Killebrew Engineering Corp., St. Louis, Mo.
Lindy Heaters, Inc., Bronx, N. Y.
Mar-Coil Heater Co., Union City, N. J.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Viking Mfg. Corp., Cleveland, O.
Yula Corp., Bronx, N. Y.

HEATERS, STEAM JET, FOR LIQUIDS

Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Croll-Reynolds Engineering Co., Inc., Stamford, Conn.
Duriron Co., Inc., The, Dayton, O.
Heil Process Equipment Corp., Cleveland, O.
National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
O'Brien Steam Specialty Co., Inc., Syracuse, N. Y. (steam-diffusers)
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sims Co., Erie, Pa.

Sims Pump Valve Co., Hoboken, N. J.
Vic Mfg. Co., Minneapolis, Minn.

HEATERS, STRIP AND IMMERSION, ELECTRIC

Acme Electric Heating Corp., Roxbury, Mass.
American Instrument Co., Inc., Silver Spring, Md.
Cutler-Hammer, Inc., Milwaukee, Wis.
Electro-Therm, Inc., Silver Spring, Md.
Falcon Equipment Co., New Brighton, Pa.
General Electric Co., Shelbyville, Ind.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Heatube Dept., Albion Div., McGraw-Edison Co., Albion, Mich.
Heil Process Equipment Corp., Cleveland, O.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Industrial Engineering & Equipment Co., St. Louis, Mo.
Red Spot Electric Co., Tacoma, Wash.
S&C Mfg. Co., Cincinnati, O.
Trent Inc., Philadelphia, Pa.
Vulcan Electric Co., Danvers, Mass.
Waage Electric, Inc., Kenilworth, N. J.
Wesix Electric Heater Co., San Francisco.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Zell-Aire Corp., Reading, Pa.

HEATERS, SUSPENDED, RADIANT, ELECTRIC

Ampere Industries, Newark, N. J.
Apextro Products Co., Div. of Apex Sheet Metal Works, Inc., Los Angeles, Calif.
Corning Glass Works, Corning, N. Y.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Heatmore, Inc., Brooklyn, N. Y.
Heatube Dept., Albion Div., McGraw-Edison Co., Albion, Mich.
Ilg Electric Ventilating Co., Chicago, Ill.
Infrared Corp. of America, Westbury, L. I., N. Y.
Luminator, Inc., Chicago, Ill.
Markel Electric Products, Inc., Buffalo, N. Y.
S&C Mfg. Co., Cincinnati, O.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles, Calif.
Thermel, Inc., Franklin Park, Ill.
Trent, Inc., Philadelphia, Pa.
Union Chill Mat Co., Saxonburg, Pa.
Vulcan Electric Co., Danvers, Mass.
Wesix Electric Heater Co., San Francisco, Calif.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Zell-Aire Corp., Reading, Pa.

HEATERS, SUSPENDED, RADIANT, GAS FIRED

Bettcher Mfg. Corp., The, Cleveland, O.
Bright Leaf Industries, Inc., Charlotte, N. C.
Catalytic Combustion Corp., Detroit, Mich.
Ilg Electric Ventilating Co., Chicago, Ill.
Perfection Industries Div., Hupp Corp., Cleveland, O.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Solarflo Co., Glendora, Calif.
Solaronics, Inc., Richmond, Va.
Space-Ray Corp., Charlotte, N. C.
Union Chill Mat Co., Saxonburg, Pa.
Van Dorn Iron Works Co., Infra-Red Div., Cleveland, O.

HEATERS, THERMAL LIQUID, FOR PROCESS HEATING

Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bros Inc., Minneapolis, Minn.
Cleaver-Brooks Co., Milwaukee, Wis.
Dean Products, Inc., Buffalo, N. Y.
International Boiler Works Co., East Stroudsburg, Pa.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.

HEATERS, UNIT, ELECTRIC HEATING ELEMENT

Acme Electric Heating Corp., Roxbury, Mass.
Berko Electric Mfg. Co., Jamaica, N. Y.
Ceilheat, Inc., Knoxville, Tenn.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Cutler-Hammer, Inc., Milwaukee, Wis.
Electrofilm, Inc., North Hollywood, Calif.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Electro-Therm, Inc., Silver Spring, Md.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Everwarm, Inc., Knoxville, Tenn.
Fresh'nd-Aire Co., Div. of Cory Corp., Chicago, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Heatmore, Inc., Brooklyn, N. Y.
Heatube Dept., Albion Div., McGraw-Edison Co., Albion, Mich.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Ilg Electric Ventilating Co., Chicago, Ill.
Kilbury Mfg. Co., Inc., Lawndale, Calif.
Markel Electric Products, Inc., Buffalo, N. Y.
Marviray, Inc., Newark, N. J.
Modernheat Cable Corp., Kingsport, Tenn.
Modine Mfg. Co., Racine, Wis.
Nesbitt, Inc., John J., Philadelphia, Pa.
Sunwarm, Inc., Kingsport, Tenn.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles.
Vapor Heating Corp., Chicago, Ill.
Vulcan Electric Co., Danvers, Mass.
Wesix Electric Heater Co., San Francisco.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Mfg. Co., Inc., Linden, N. J.
Zell-Aire Corp., Reading, Pa.
Wing Mfg. Co., L. J., Div. of Aero Supply

HEATERS, UNIT, ELECTRIC HEATING ELEMENT, EXPLOSION PROOF

Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Electro-Therm, Inc., Silver Spring, Md.
Heatube Dept., Albion Div., McGraw-Edison Co., Albion, Mich.
Ilg Electric Ventilating Co., Chicago, Ill.
Nesbitt, Inc., John J., Philadelphia, Pa.
Vulcan Electric Co., Danvers, Mass.
Wesix Electric Heater Co., San Francisco, Calif.
Wiegand Co., Edwin L., Pittsburgh, Pa.

HEATERS, UNIT, GAS, PROPELLER FAN TYPE

Airtherm Mfg. Co., St. Louis, Mo.
American Furnace Co., St. Louis, Mo.
American-Standard Industrial Div., Detroit, Mich.
Arkla Air Conditioning Corp., Little Rock, Ark.
Barwick Mfg. Corp., Wichita, Kan.
Bryant Mfg. Co., Indianapolis, Ind.
Burnham Corp., Irvington, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Crane Co., Chicago, Ill.
Day & Night Mfg. Co., La Puente, Calif.
Dover Corp., Peerless Mfg. Div., Louisville, Ky.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Fedders Corp., Heating Div., Trenton, N. J.
Gaffers & Sattler, Los Angeles, Calif.
Grinnell Co., Inc., Providence, R. I.
Hastings Air Control, Inc., Omaha, Nebr.
Henry Furnace Co., The, Medina, O.
Ilg Electric Ventilating Co., Chicago, Ill.
Jackson & Church Co., Saginaw, Mich.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., Columbus, O.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Lennox Industries Inc., Des Moines, Ia.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Norman Products Co., Inc., Columbus, O.
Ohio Foundry & Mfg. Co., Steubenville, O.
Olsen Mfg. Co., C. A., Elyria, O.
Over-Head Heaters, Inc., Detroit, Mich.
Payne Company, La Puente, Calif.
Pioneer Mfg. Co., Los Angeles, Calif.
Reznor Mfg. Co., Mercer, Pa.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Sterlairco, Inc., Westfield, Mass.
Surface Combustion Corp., Toledo, O.
Temco, Inc., Nashville, Tenn.
Trane Co., The, La Crosse, Wis.
Tuck-Aire Furnace Co., San Francisco, Calif.
U. S. Air Conditioning Corp., Delaware, O.
Vacuum Gas Burner Co., Olean, N. Y.
Webster & Co., Warren, Camden, N. J.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Young Radiator Co., Racine, Wis.
Zink Co., John, Tulsa, Okla.

HEATERS, UNIT, OIL, PROPELLER FAN TYPE

Interstate Heater Mfg. Co., Denver, Colo.
Sterlairco, Inc., Westfield, Mass.

HEATERS, UNIT, STEAM AND HOT WATER, CABINET TYPE

Air Conditioning Engineering Co., Cambridge, Mass.
Airfan Engineering Co., Los Angeles, Calif.
Airtherm Mfg. Co., St. Louis, Mo.
American-Standard Industrial Div., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders Corp., Heating Div., Trenton, N. J.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Ilg Electric Ventilating Co., Chicago, Ill.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Niagara Blower Co., New York, N. Y.
Recold Corp., Los Angeles, Calif.
Rittling Corp., The, Buffalo, N. Y.
Trane Co., The, La Crosse, Wis.
Schemenauer Mfg. Corp., Holland, O.
Webster & Co., Warren, Camden, N. J.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div.
Boston, Mass.
Young Radiator Corp., Racine, Wis.

HEATERS, UNIT, STEAM AND HOT WATER, CENTRIFUGAL FAN TYPE

Air Conditioning Engineering Co., Cambridge, Mass.
Airtherm Mfg. Co., St. Louis, Mo.
American-Standard Industrial Div., Detro Mich.
Blazer Corp., Passaic, N. J.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Air Conditioning Co., Div. of Carri Corp., Syracuse, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Drayer-Hanson Div., Crane Co., Los Angele Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Kennard Products, American Air Filter Co. Inc., Louisville, Ky.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Nesbitt, Inc., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Niagara Blower Co., New York, N. Y.
Recold Corp., Los Angeles, Calif.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, La Crosse, Wis.
Webster & Co., Warren, Camden, N. J.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wilson Engineering Corp., Chicago, Ill.
Young Radiator Co., Racine, Wis.

HEATERS, UNIT, STEAM AND HOT WATER, PROPELLER FAN TYPE, HORIZONTAL BLOW

Airtherm Mfg. Co., St. Louis, Mo.
American-Standard Industrial Div., Detroit, Mich.
Beacon-Morris Corp., Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Burnham Corp., Irvington, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.

Clarage Fan Co., Kalamazoo, Mich.
Crane Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders Corp., Heating Div., Trenton, N. J.
Grinnell Co., Inc., Providence, R. I.
Hartzell Propeller Fan Co., Piqua, O.
Herman Nelson Products, American Air Filter Co. Inc., Louisville, Ky.
Ilg Electric Ventilating Co., Chicago, Ill.
King Co. of Owatonna, The, Owatonna, Minn.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Kritzer Radiant Coils, Inc., Batavia, Ill.
McCord Corp., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Merchant & Evans Co., Philadelphia, Pa.
Modine Mfg. Co., Racine, Wis.
Muckle Mfg. Co., Owatonna, Minn.
Murray Mfg. Co., D. J., Wausau, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Trane Co., The, La Crosse, Wis.
Webster & Co., Warren, Camden, N. J.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wilson Engineering Corp., Chicago, Ill.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Young Radiator Co., Racine, Wis.

HEATERS, UNIT, STEAM AND HOT WATER, PROPELLER FAN TYPE, VERTICAL BLOW

Airtherm Mfg. Co., St. Louis, Mo.
American-Standard Industrial Div., Detroit, Mich.
Beacon-Morris Corp., Boston, Mass.
Burnham Corp., Irvington, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Crane Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders Corp., Heating Div., Trenton, N. J.
Gallaher Co., The, Omaha, Neb.
Grinnell Co., Inc., Providence, R. I.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Ilg Electric Ventilating Co., Chicago, Ill.
Kritzer Radiant Coils, Inc., Batavia, Ill.
McCord Corp., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Murray Mfg. Co., D. J., Wausau, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Niagara Blower Co., New York, N. Y.
Rittling Corp., The, Buffalo, N. Y.
Trane Co., The, La Crosse, Wis.
Vapor Heating Corp., Chicago, Ill.
Webster & Co., Warren, Camden, N. J.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J. (Revolving)
Young Radiator Co., Racine, Wis.

HEATERS, VENTILATION

See Ventilators, Roof, Fan; Ventilators, Unit; Surface, Finned, Heating; Units, Makeup Air, Heating and Ventilating, Package Type, Steam or Hot Water; Units, Makeup Air, Heating and Ventilating, Horizontal Package Type, Direct Fired, Oil, and Gas

HEATERS, WALL, CIRCULATING, ELECTRIC

Arvin Industries, Inc., Columbus, Ind.
Broan Mfg. Co., Inc., Hartford, Wis.
Cavalier Corp., Electric Heating Div., Chattanooga, Tenn.
Ceilheat, Inc., Knoxville, Tenn.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Electrend Products Corp., St. Joseph, Mich.
Electric Heating & Cooling, Inc., Newark, N. J.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Everwarm, Inc., Knoxville, Tenn.
General Electric Co., Wiring Device Dept., Electric Comfort Heating Section, Louisville, Ky.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
Markel Electric Products, Inc., Buffalo, N. Y.
Matthews Electric Heater Mfg. Co., Albertville, Ala.
Modernheat Cable Corp., Kingsport, Tenn.
Perfection Div., Hupp Corp., Cleveland, O.
Sunwarm, Inc., Kingsport, Tenn.
Tennessee Plastics, Inc., Johnson City, Tenn.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles, Calif.
Trade-Wind Div., Robbins & Myers, Inc., Pico Rivera, Calif. (wall insert type)
Wesix Electric Heater Co., San Francisco, Calif.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Wiegand Co., Edwin L. Pittsburgh, Pa.

HEATERS, WALL, CIRCULATING, GAS FIRED

Advance Furnace Co., Wichita, Kans.
Coleman Co., Inc., The, Wichita, Kan.
Consumer Products, Motor Wheel Corp., Lansing, Mich.
Day & Night Mfg. Co., La Puente, Calif.
Dearborn Stove Co., Dallas, Tex.
Dover Corp., Peerless Mfg. Div., Louisville, Ky.
Kilbury Mfg. Co., Inc., Lawndale, Calif.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Ohio Foundry & Mfg. Co., Steubenville, O.
Payne Company, La Puente, Calif.
Pioneer Mfg. Co., Los Angeles, Calif.
Republic Appliance Div., Republic-Transcon Industries, Inc., Beverly Hills, Calif.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Stewart-Warner Corp., South Wind Div., Indianapolis, Ind.
Temco, Inc., Nashville, Tenn.
Vacuum Gas Burner Co., Olean, N. Y.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Zink Co., John, Tulsa, Okla.

HEATERS, WALL, CIRCULATING, OIL FIRED

Consumer Products, Motor Wheel Corp., Lansing, Mich.
Kleer Kleen Mfg. Co., Hayward, Calif.
Kresky Mfg. Co., Petaluma, Calif.
Perfection Div., Hupp Corp., Cleveland, O.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.

HEATERS, WATER, AIR-TANKLESS

Tankless Water Heater and Compression Tank Combined

American Tube & Controls, Inc., West Warwick, R. I.
Ascot Gas Water Heaters, Inc., Milwaukee, Wis.
Bell & Gossett Co., Morton Grove, Ill.
Edwards Engineering Corp., Pompton Plains, N. J.
General Fittings Co., East Greenwich, R. I.
Lewis & Saunders, Inc., Lakeport, N. H.
Mar-Coil Heater Co., Union City, N. J.
Old Dominion Iron & Steel Corp., Richmond, Va.
Portmar Boiler Co., Inc., Brooklyn, N. Y.

HEATERS, WATER, CAST IRON, COAL FIRED

Adams Co., The, Dubuque, Ia.
Burnham Corp., Irvington, N. Y.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Peerless Heater Co., The, Div. of The Eastern Foundry Co., Boyertown, Pa.
Prox Co., Inc., Frank, Terre Haute, Ind.
Smith Co., Inc., H. B., The, Westfield, Mass.
Weil-McLain Co., Michigan City, Ind.

HEATERS, WATER, ELECTRIC

Allcraft Mfg. Co., Inc., Cambridge, Mass.
American-Standard Plumbing & Heating Div., New York, N. Y.
Appliance Bldg. Co., Inc., Seattle, Wash.
Auburn Burner Co., Auburn, Ind.
Bastian-Morley Co., Inc., LaPorte, Ind.
Can Arm Corp., Champlain, N. Y.
Clayton & Lambert Mfg. Co., Louisville, Ky.
Cleveland Heater Co., Cleveland, O.
Crane Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Day & Night Mfg. Co., La Puente, Calif.
Electro-Therm, Inc., Silver Spring, Md.
Frigidaire Div., General Motors Corp., Dayton, O.
Heatube Dept., Albion Div., McGraw-Edison Co., Albion, Mich.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Hotpoint, Chicago, Ill.
Hotstream Heater Co., Cleveland, O.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Industrial Engineering & Equipment Co., St. Louis, Mo.
Koven & Bro. Inc., L. O., Dover, N. J.
Modern Water Equipment Co., Freeport, Ill.
Mor-Flo Heater Corp., Cleveland, O.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Pioneer Mfg. Co., Los Angeles, Calif.
Precision Parts Corp., Nashville, Tenn.
Red Spot Electric Co., Tacoma, Wash.
Republic Appliance Div., Republic-Transcon Industries, Inc., Beverly Hills, Calif.
Rheem Mfg. Co., Chicago, Ill.
Smith Corp., A. O., Permaglas Div., Kankakee, Ill.
Thermador Electric Mfg. Co., Div. of Norris Thermador Corp., Los Angeles, Calif.
Viking Mfg. Corp., Cleveland, O.
Vulcan Electric Co., Danvers, Mass.
Wesix Electric Heater Co., San Francisco, Calif.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wood Co., John, Conshohocken, Pa.

HEATERS, WATER, GAS FIRED

Ajax Boiler & Heater Co., Gardena, Calif.
Aldrich Co., Wyoming, Ill.
Allcraft Mfg. Co., Inc., Cambridge, Mass.
American-Standard Plumbing & Heating Div., New York, N. Y.
Ascot Gas Water Heaters, Inc., Milwaukee, Wis.
Auburn Burner Co, Auburn, Ind.
Bastian-Morley Co., Inc., LaPorte, Ind.
Bica Co., Girard, O.
Bock Corp., Madison, Wis.
Bryan Steam Corp., Peru, Ind.
Bryant Mfg. Co., Indianapolis, Ind.
Clayton & Lambert Mfg. Co., Louisville, Ky.
Cleveland Heater Co., Cleveland, O.
Commercial Heater Co., Ft. Worth, Tex.
Crane Co., Chicago, Ill.
Day & Night Mfg. Co., La Puente, Calif.
Edgewood Mfg. Co., El Monte, Calif.
Edwards Engineering Corp., Pompton Plains, N. J.
Equipco, Inc., Portland, Ore.
Everhot Heater Div., Temprite Products, Detroit, Mich.
Ewing Mfg. Co., Oklahoma City, Okla.
Hotstream Heater Co., Cleveland, O.
Hydrotherm, Inc., Northvale, N. J.
Koven & Bro. Inc., L. O., Dover, N. J.
Laars Engineers, North Hollywood, Calif.
Malsbary Mfg. Co., Oakland, Calif.
Mor-Flo Heater Corp., Cleveland, O.
Mt. Hawley Mfg. Co., Inc., Peoria, Ill.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Pacific Steel Boiler Div., Crane Co., Johnstown, Pa.
Parker Boiler Mfg. Co., Sid E., Los Angeles, Calif.
Patterson-Kelley Co., Inc., East Stroudsburg, Pa.
Penn Boiler Div., Pebbco Industries, Inc., Lancaster, Pa.
Pioneer Mfg. Co., Los Angeles, Calif.
Radiant Heat and Cooling Co., Santa Clara, Calif.
Radiant Utilities Corp., Brooklyn, N. Y.
Ray Oil Burner Co., San Francisco, Calif.
Raypak Co., Inc., El Monte, Calif.
Republic Appliance Div., Republic-Transcon Industries, Inc., Beverly Hills, Calif.
Rheem Mfg. Co., Chicago, Ill.
Rite Engineering & Mfg. Corp., Downey, Calif.
Ruud Mfg. Co., Kalamazoo, Mich.
Smith Corp., A. O., Permaglas Div., Kankakee, Ill.
Schoedinger, Inc., F. O., Columbus, O.

Sellers Engineering Co., Chicago, Ill.
Smith Co., Inc., H. B., The, Westfield, Mass.
Stout & Sons, David, St. Louis, Mo.
Trageser Copper Works, Inc., Jamaica, N. Y.
Viking Mfg. Corp., Cleveland, O.
Western Boiler Co., Los Angeles, Calif.
Wood Co., John, Conshohocken, Pa.

HEATERS, WATER, INDIRECT

Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Ajax Boiler & Heater Co., Gardena, Calif.
Alstrom Corp., New York, N. Y.
American-Standard Plumbing & Heating Div., New York, N. Y.
American Tube & Controls, Inc., West Warwick, R. I.
Bell & Gossett Co., Morton Grove, Ill.
Bernstrom, Inc., C. R., Providence, R. I.
Birchfield Boiler, Inc., Tacoma, Wash.
Bryan Steam Corp., Peru, Ind.
Bryant Mfg. Co., Indianapolis, Ind.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dean Thermo-Panel Coil Div., Dean Products, Inc., Brooklyn, N. Y.
Doyle & Roth Mfg. Co., Inc., Brooklyn.
Ellicott Fabricators, Inc., Baltimore, Md.
General Fittings Co., East Greenwich, R. I.
Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Harrison Sheet Steel Co., Chicago, Ill.
Hydrotherm, Inc., Northvale, N. J.
Kam Products Corp., Brooklyn, N. Y.
Killebrew Engineering Corp., St. Louis, Mo.
Lewis & Saunders, Inc., Lakeport, N. H.
Lindy Heaters, Inc., Bronx, N. Y.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Penn Boiler Div., Pebbco Industries, Inc., Lancaster, Pa.
Portmar Boiler Co., Inc., Brooklyn, N. Y.
Raypak Co., Inc., El Monte, Calif.
Rite Engineering & Mfg. Corp., Downey, Calif.
Sellers Engineering Co., Chicago, Ill.
Sims Co., Erie, Pa.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Water Tube Boiler & Tank Co., Chicago, Ill.
Weil-McLain Co., Michigan City, Ind.
Western Blower Co., Seattle, Wash.
Whitlock Mfg. Co., W. Hartford, Conn.
Yula Corp., Bronx, N. Y.

HEATERS, WATER, INDIRECT, COMBINATION TANK AND TANKLESS

Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Alstrom Corp., New York, N. Y.
American Tube & Controls, Inc., West Warwick, R. I.
Bell & Gossett Co., Morton Grove, Ill.
Birchfield Boiler, Inc., Tacoma, Wash.
Bros Inc., Minneapolis, Minn.
Buxton Mfg. Co., Dover, N. J.
Carpenter Heating & Air Conditioning Co., Cleveland, O.
Crotty Mfg. Corp., Flushing, Long Island, N. Y.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Edwards Engineering Corp., Pompton Plains, N. J.
Ellicott Fabricators, Inc., Baltimore, Md.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (graphite)
General Fittings Co., East Greenwich, R. I.
Hydrotherm, Inc., Northvale, N. J.
Kam Products Corp., Brooklyn, N. Y.
Killebrew Engineering Corp., St. Louis, Mo.
Lindy Heaters, Inc., Bronx, N. Y.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Portmar Boiler Co., Inc., Brooklyn, N. Y.
Richmond Engineering Co., Richmond, Va.
Sims Co., Erie, Pa.
Taco Heaters, Inc., Cranston, R. I.
Water Tube Boiler & Tank Co., Chicago, Ill.
Weil-McLain Co., Michigan City, Ind.
Western Blower Co., Seattle, Wash.
Whitlock Mfg. Co., W. Hartford, Conn.
Yula Corp., Bronx, N. Y.

HEATERS, WATER, OIL FIRED

Aeroil Products Co., Inc., South Hackensack, N. J.
Ajax Boiler & Heater Co., Gardena, Calif.
Aldrich Co., Wyoming, Ill.
Auburn Burner Co., Auburn, Ind.
Bock Corp., Madison, Wis.
Bryan Steam Corp., Peru, Ind.
Burnham Corp., Irvington, N. Y.
Carlin Co., The, Wethersfield, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Electrol Burner Mfg. Co., Inc., Rutherford, N. J.
Hotstream Heater Co., Cleveland, O.
Johnson Co., S. T., Oakland, Calif.
Koven & Bros. Inc., L. O., Dover, N. J.
Mt. Hawley Mfg. Co., Inc., Peoria, Ill.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Pacific Steel Boiler Div., Crane Co., Johnstown, Pa.
Parker Boiler Mfg. Co., Sid E., Los Angeles, Calif.
Penn Boiler Div., Pebbco Industries, Inc., Lancaster, Pa.
Petro, Cleveland, O.
Portmar Boiler Co., Inc., Brooklyn, N. Y.
Preferred Utilities Mfg. Corp., New York.
Quiet Automatic Oil Burner Corp., Newark, N. J.
Radiant Utilities Corp., Brooklyn, N. Y.
Ray Oil Burner Co., San Francisco, Calif.
Reif-Rexoil, Inc., Buffalo, N. Y.
Rheem Mfg. Co., Chicago, Ill.
Rite Engineering & Mfg. Corp., Downey, Calif.
Smith Co., Inc., H. B., The, Westfield, Mass.
Vapor Heating Corp., Chicago, Ill.
Viking Mfg. Corp., Cleveland, O.
Way-Wolff Associates, Inc., Long Island City, N. Y.
Western Boiler Co., Los Angeles, Calif.
Wood Co., John, Conshohocken, Pa.

HEATERS, WATER, STEAM, INSTANTANEOUS

Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Aerco Corp., Northvale, N. J.
Alco Products, Inc., Schenectady, N. Y.
Alstrom Corp., New York, N. Y.
American-Standard Industrial Div., Detroit, Mich.
American Tube & Controls, Inc., West Warwick, R. I.
Bell & Gossett Co., Morton Grove, Ill.
Bernstrom, Inc., C. R., Providence, R. I.
Buxton Mfg. Co., Dover, N. J.
Coe Mfg. Co., Painesville, O. (safety water heater)
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Cooley Co., E. C., San Francisco, Calif.
Croll-Reynolds Engineering Co., Inc., Stamford, Conn.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Eclipse Boiler Div., Eclipse Fuel Engineering Co., Chattanooga, Tenn.
Ellicott Fabricators, Inc., Baltimore, Md.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Fittings Co., East Greenwich, R. I.
Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Johnson Corp., The, Three Rivers, Mich.
Kam Products Corp., Brooklyn, N. Y.
Killebrew Engineering Corp., St. Louis, Mo.
Koven & Bro. Inc., L. O., Dover, N. J.
Lewis & Saunders, Inc., Lakeport, N. H.
Lindy Heaters, Inc., Bronx, N. Y.
Malsbary Mfg. Co., Oakland, Calif.
Manning & Lewis Engineering Co., Union, N. J.
Marion Machine Foundry, Inc., Marion, Ind.
National Pipe Bending Co., New Haven, Conn.
O'Brien Steam Specialty Co., Inc., Syracuse, N. Y.
Pacific Steel Boiler Div., Crane Co., Johnstown, Pa.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Pick Mfg. Co., West Bend, Wis. (direct steam injection)
Portmar Boiler Co., Inc., Brooklyn, N. Y.
Radiant Utilities Corp., Brooklyn, N. Y.
Richmond Engineering Co., Richmond, Va.
Rite Engineering & Mfg. Corp., Downey, Calif.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sims Co., Erie, Pa.
Sirod Corp., Milwaukee, Wis.
Taco Heaters, Inc., Cranston, R. I.
Viking Mfg. Corp., Cleveland, O.
Water Tube Boiler & Tank Co., Chicago, Ill.
Whitlock Mfg. Co., W. Hartford, Conn.
Yula Corp., Bronx, N. Y.

HEATERS, WATER, STEAM, STORAGE

Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Aerco Corp., Northvale, N. J.
Alco Products, Inc., Schenectady, N. Y.
Alstrom Corp., New York, N. Y.
Baker, Inc., C. I., Lorain, O.
Bell & Gossett Co., Morton Grove, Ill.
Birchfield Boiler, Inc., Tacoma, Wash.
Bros Inc., Minneapolis, Minn.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dean Products, Inc., Brooklyn, N. Y.
Ellicott Fabricators, Inc., Baltimore, Md.
General Fittings Co., East Greenwich, R. I.
Johnson Corp., The, Three Rivers, Mich.
Kam Products Corp., Brooklyn, N. Y.
Killebrew Engineering Corp., St. Louis, Mo.
Koven & Bro. Inc., L. O., Dover, N. J.
Lindy Heaters, Inc., Bronx, N. Y.
Lucey Alloy Products Corp., Chattanooga, Tenn.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis.
Marion Machine Foundry, Inc., Marion, Ind.
National Pipe Bending Co., New Haven, Conn.
Old Dominion Iron & Steel Corp., Richmond, Va.
Pacific Steel Boiler Div., Crane Co., Johnstown, Pa.
Parker Boiler Mfg. Co., Sid E., Los Angeles, Calif.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Process Engineering, Inc., Methuen, Mass.
Quaker City Iron Works, Philadelphia, Pa.
Richmond Engineering Co., Richmond, Va.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Sims Co., Erie, Pa.
Stout & Sons, David, St. Louis, Mo.
Taco Heaters, Inc., Cranston, R. I.
Terre Haute Boiler Works Co., Terre Haute, Ind.
Tranter Mfg. Inc., Lansing, Mich.
Viking Mfg. Corp., Cleveland, O.
Vogt Machine Co., Henry, Louisville, Ky.
Water Tube Boiler & Tank Co., Chicago, Ill.
Western Blower Co., Seattle, Wash.
Whitlock Mfg. Co., W. Hartford, Conn.
Yula Corp., Bronx, N. Y.

HEATERS, WATER, STEEL, COAL FIRED

Finnigan & Co., Inc., J. J., Atlanta, Ga.
Johnston Bros., Inc., Ferrysburg, Mich.
Pacific Steel Boiler Div., Crane Co., Johntown, Pa.
Terre Haute Boiler Works Co., Terre Haute, Ind.

HEATING BOILERS

See Boilers, Heating

HEATING COILS

See Surface, Finned, Heating

HEATING COILS, FINNED

See Surface, Finned, Heating

HEATING SURFACE

See Surface, Finned, Heating

HEATING AND VENTILATING UNITS

See Units, Heating and Ventilating, Horizontal Package Type

HEATING AND VENTILATING UNITS, MAKEUP AIR, PACKAGE TYPE, DIRECT FIRED, OIL

See Units, Makeup Air, Heating and Ventilating, Horizontal Package Type, Direct Fired, Oil, and Gas; Units, Makeup Air, Heating and Ventilating, Package Type, Steam or Hot Water

HIGH TEMPERATURE HOT WATER GENERATORS

See Boilers

HIGH VELOCITY AIR SYSTEM PIPE

See Ducts, Spiral Welded

HIGH VELOCITY MIXING UNITS, SOUND AND VOLUME CONTROL, FOR AIR CONDITIONING SYSTEMS

See Units, Mixing, Sound and Volume Control, for Double Duct High Velocity Air Conditioning Systems

HOISTS, PORTABLE, FOR INSTALLING HEATING, PIPING AND AIR CONDITIONING EQUIPMENT

Aluminum Products, Inc., Fort Lauderdale, Fla.
American Gauge & Mfg. Co., Dayton, O.
Broad Crane & Engineering Service Co., Detroit, Mich.
Burtchaell Heating Co., Portland, Ore.
Chicago Pneumatic Tool Co., New York, N. Y.
Chisholm-Moore Hoist Div., Columbus McKinnon Corp., Tonawanda, N. Y.
Coffing Hoist Div., Duff-Norton Co., Charlotte, N. C.
Detroit Hoist & Machine Co., Detroit, Mich.
Gardner-Denver Co., Quincy, Ill.
Griphoist, Inc., San Francisco, Calif.
Hastings Air Control, Inc., Omaha, Nebr.
Indus Corp., Indianapolis, Ind.
Lug-All Co., The, Haverford, Pa.
Philadelphia Hoist Div., Industrial Enterprises, Inc., Doylestown, Pa.
Robbins & Meyers, Inc., Springfield, O.
Sponhaltz Enterprises, Inc., Sponhoist Crane Co. Div, Oklahoma City, Okla.
Thern Machine Co., Winona, Minn.
Thor Power Tool Co., Aurora, Ill.
Wallace Products Corp., B. E., Exton, Pa. (adjustable tripods, gantries)
Wise Engineering Co., Newark, N. J.

HOLDERS AND FILES, CATALOG, FOR ENGINEERS' AND CONTRACTORS' OFFICES

Geneva Mfg Co South Elgin, Ill.
Industrial Plastic Fabricators, Norwood, Mass.
Lewbill Industries, Inc., Scottdale, Pa.
Momar Industries, Inc., Chicago, Ill.

HOODS, FUME DISPOSAL, CORROSION RESISTANT

American Agile Corp., Bedford, O.
American Blow Pipe Co., Chicago, Ill.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Argo Plastic Products, Cleveland, O.
Ceilcote, Inc., Cleveland, O
Corite-Reynolds Corp., Des Plaines, Ill. (plastic)
David-Ludwig Co., Detroit, Mich.
DuVerre, Inc., Buffalo, N. Y (plastic)
Electro-Chemical Products Corp., Cleveland, O. (PVC plastic)
Heil Process Equipment Corp., Cleveland, O.
Kirk & Blum Mfg. Co., Cincinnati, O.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (PVC and rubber lined steel)
Molded Fiber Glass Sheet Co., Ashtabula, O.
South Bend Air Products, Inc., South Bend, Ind.
United Sheet Metal Co., Inc., Columbus, O.

HOODS, FUME DISPOSAL, LABORATORY

Air Pollution Control Div., John Wood Co., Bernardsville, N. J.
American Agile Corp., Bedford, O.
Atlas Mineral Products Co., Mertztown, Pa.
Ceilcote, Inc., Cleveland, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Corite-Reynolds Corp., Des Plaines, Ill. (plastic)
DuVerre, Inc., Buffalo, N. Y. (plastic)
Ervite Corp., Erie, Pa.
General Metals, Inc., Greensboro, N. C.
Griffin & Co., Louisville, Ky.
Heil Process Equipment Corp., Cleveland, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC and polyethylene)
Kirk & Blum Mfg. Co., Cincinnati, O.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (PVC and rubber lined steel)
Mirror Patented Stove Pipe Co., Hartford, Conn.
Schneible Co., Claude B., Detroit, Mich.
Sheldon Equipment Co., E. H., Muskegon, Mich.
United Sheet Metal Co., Inc., Columbus, O.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Zack Co., The, Chicago, Ill.

HOSE CLAMPS

See Clamps, Hose

HOSE, FLEXIBLE, METAL, AND FITTINGS

Airaterra (Roylyn Products), Glendale, Calif.
Allied Metal Hose Co., Long Island City, N. Y.
Ammerman, Inc., Stillwater, Minn.
Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.
Argo Plastic Products, Cleveland, O.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Atlantic Metal Hose Co., Inc., New York.
Breeze Corporations, Inc., Union, N. J.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Croker Fire Protection Co., New York, N. Y.
Fine Products Co., Berwyn, Ill.
Finn & Co., Inc., T. R., Hawthorne, N. J.
Flexaust Co. New York, N. Y.
Flexible Metal Hose Mfg. Co., Costa Mesa, Calif.
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
Goodall Rubber Co., Trenton, N. J.
Hydrox-Flex Corp., Topeka, Kans.
International Metal Hose Co., Bellevue, O.
Johnson Metal Hose, Inc., Waterbury, Conn.
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co., San Francisco, Calif.
Korfund Co., Inc., Westbury, L. I., N. Y.
Lenz Co., Dayton, O.
Marquette Coppersmithing Co., Philadelphia, Pa.
MetraFlex Co., The, Skokie, Ill.
Mic Lin Co Maple Shade N. J.
Mulconroy Co., Philadelphia, Pa.
Packless Metal Hose, Inc., Mt Vernon, N. Y.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Pennsylvania Flexible Metallic Tubing Co., Paoli, Pa.
Perfecting Service Co., Charlotte, N. C.
Seamlex Co., Inc., Long Island City, N. Y.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Techniflex Div., Port Jervis, N. Y.
Titeflex Inc., Springfield, Mass.
United Metal Hose Co., Inc., Long Island City, N. Y.
Universal Metal Hose Co., Chicago, Ill.
Vibration Mountings & Controls, Inc., Corona, N. Y.
Zallea Brothers, Wilmington, Del.

HOSE, NON-METAL, AND FITTINGS

Acme-Hamilton Mfg. Corp., Trenton, N. J.
Aeroquip Corp., Jackson, Mich.
Airaterra (Roylyn Products), Glendale, Calif.
Ammerman Inc., Stillwater, Minn.
Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.
Anchor Coupling Co. Inc., Libertyville, Ill.
Anchor Packing Co., Philadelphia, Pa.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Binks Mfg. Co., Chicago, Ill
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Burton Mfg. Co., Middlefield, O.
Continental Rubber Works, Erie, Pa.
Dayco Corp., Dayton, O.
Dayton Industrial Products Co., Melrose Park, Ill.
DeVilbiss Co., The, Toledo, O.
Dole Refrigerating Co., Chicago, Ill.
Electric Hose & Rubber Co., Wilmington, Del.
Fine Products Co., Berwyn, Ill.
Flexaust Co., New York, N. Y.
Flexible Tubing Corp., Guilford, Conn.
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
Gates Rubber Co., The, Denver, Colo.
Goodrich Industrial Products Co., B. F., Akron, O (rubber)
Goodyear Tire & Rubber Co., Akron, O.
Hewitt-Robins Inc., Stamford, Conn.
Hofmann Engineering Co., Chicago, Ill.
Hose Accessories Co., Philadelphia, Pa.
Imperial-Eastman Corp., Chicago, Ill.
Korfund Co., Inc., Westbury, L. I., N. Y. (rubber)
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rubber)
Lenz Co., Dayton, O.
Mercer Rubber Co., Hamilton Sq., N. J.
Mulconroy Co., Philadelphia, Pa
Newage Industries, Inc., Jenkintown, Pa.
New York Belting & Packing Co., Passaic, N. J.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Polymer Corp., The, Reading, Pa. (nylon pressure tubing and hose)
Porter Co., Inc., H. K., Thermoid Div., Philadelphia, Pa.
Raybestos-Manhattan, Inc., Passaic, N. J.
Republic Rubber Div., Lee Rubber and Tire Corp., Youngstown, O
Research Vacuum Supply Co., Chicago, Ill.
Resistoflex Corp., Roseland, N. J.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Thermoid Co., Trenton, N. J.
Thor Power Tool Co., Aurora, Ill.
Titeflex, Inc., Springfield, Mass. (teflon)
United States Rubber Co., New York, N. Y.
Vibration Mountings & Controls, Inc., Corona, N. Y.
Vortox Co., Claremont, Calif.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

HOSE, REFRIGERANT CHARGING

Aeroquip Corp., Jackson, Mich.
Electric Hose & Rubber Co., Wilmington, Del.
Henry Valve Co., Melrose Park, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Madden Brass Products Co., Aurora, Ill.
McIntire Co., The, Livingston, N. J.
Mueller Brass Co., Port Huron, Mich.
Robinair Mfg. Corp., Montpelier, O.
Seamlex Co., Inc., Long Island City, N. Y.
Superior Valve and Fittings Co., Pittsburgh, Pa
Techniflex Div., Port Jervis, N. Y.

HOSE, VENTILATING

See Ducts and Duct Fittings, Prefabricated, Non-Flexible, Non-Metalic

HOSPITAL OPERATING ROOM AIR CONDITIONING UNITS

See Unitary Air Conditioners, Exclusively for Hospital Operating Rooms

HOT GAS DEFROSTING

See Systems, Hot Gas Defrosting for Refrigeration

HOT WATER HEATING AND CHILLED WATER SYSTEMS, BALANCING ELBOWS AND TEES FOR

See Elbows and Tees, Balancing, for Hot Water Heating and Chilled Water Systems

HOT WATER HEATING SYSTEMS

See Systems, Heating, Hot Water

HOT WATER PRESSURE REGULATORS

See Regulators, Pressure, Hot Water Heating Systems

HOUSINGS, FAN, CENTRIFUGAL

(Housing only—not complete fans)

Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland, O.
Airfan Engineering Co., Los Angeles, Calif.
Ammerman Inc., Stillwater, Minn.
Barry Blower Co., Minneapolis, Minn.
Brundage Co., The, Kalamazoo, Mich.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Fan & Ventilator Co., Cincinnati, O.
Clarage Fan Co., Kalamazoo, Mich.
Commercial Shearing & Stamping Co., Youngstown, O.
Detroit Stamping Co., Detroit, Mich.
Ervite Corp., Erie, Pa.
General Blower Co., Subsid. Ilg Electric Ventilating Co., Morton Grove, Ill.
Haveg Industries, Inc., Wilmington, Del. (plastic for corrosive fumes)
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Littleford Bros., Inc., Cincinnati, O.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
Morrison Products, Inc., Cleveland, O.
Phoenix Products Co., Milwaukee, Wis. (spun inlets)
Power Engineering Corp., Mingo Jct., O.
Revcor Inc., Carpentersville, Ill.
Ripley Co., Inc., Middletown, Conn.
Torit Mfg. Co., St. Paul, Minn.
Torrington Mfg. Co., The, Torrington, Conn.
U.S. Air Conditioning Corp., Delaware, O.
United Sheet Metal Co., Inc., Columbus, O.
Utica Products, Inc., Utica, N. Y.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.

HOUSINGS, FAN, PROPELLER

(Housing only—not complete fans)

Allen Cooler & Ventilator, Inc., Rochester, Mich.
Ammerman Inc., Stillwater, Minn.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Fan & Ventilator Co., Cincinnati, O.
Commercial Shearing & Stamping Co., Youngstown, O.
Ervite Corp., Erie, Pa.
Haveg Industries, Inc., Wilmington, Del. (plastic for corrosive fumes)
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
International Engineering, Inc., Dayton, O.
Kody Blower Co., Trenton, N. J.
Littleford Bros., Inc., Cincinnati, O.
Martin Fan & Blower Co., Chicago, Ill.
Phoenix Products Co., Milwaukee, Wis. (spun inlets)
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Torrington Mfg. Co., Torrington, Conn.
United Sheet Metal Co., Inc., Columbus, O.

HUMIDIFIERS, CENTRAL PLANT

Air & Refrigeration Corp., New York, N. Y.
American Moistening Co., Cleveland, N. C.
American-Standard Industrial Div., Detroit, Mich.
Armstrong Machine Wks., Three Rivers, Mich.
Bahnson Co., Winston-Salem, N. C.
Buensod-Stacey Corp., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Cleveland Humidifier Co., Cleveland, O.
Farr Co., Los Angeles, Calif.
General Filters, Inc., Novi, Mich.
HERRmidifier Co., Lancaster, Pa.
Humidaire Corp., Genoa, Ill.
Johnson Service Co., Milwaukee, Wis.
Little Giant Pump Div., Little Giant Corp., Oklahoma City, Okla. (vaporizers for humidifiers)
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Niagara Blower Co., New York, N. Y.
Norky Mfg. Corp., Covington, Ky.
Norwood Products Co., Div. A. R. Wood Mfg. Co., Luverne, Minn.
Parks-Cramer Co., Fitchburg, Mass.
Powers Regulator Co., Skokie, Ill.
Rempe Co., Chicago, Ill.
Research Products Corp., Madison, Wis.
Skuttle Mfg. Co., Milford, Mich.
Southworth Machine Co., Portland, Me.
Surface Combustion Corp., Toledo, O.
Swan Humidifier Co., Ballston Spa., N. Y.
Trane Co., The, LaCrosse, Wis.
U. S. Engineering & Mfg. Co., Chicago, Ill.
Vilter Mfg. Co., Milwaukee, Wis.
Walton Laboratories, Inc., Irvington, N. J.
Water Cooling Corp., New York, N. Y.
York Div., Borg-Warner Corp., York, Pa.

HUMIDIFIERS, DIRECT, SPRAY HEAD

Abbeon Supply Co., Jamaica, N. Y.
American Moistening Co., Cleveland, N. C.
Bahnson Co., Winston-Salem, N. C. (Centrifugal)
Binks Mfg. Co., Chicago, Ill.
Buffalo Forge Co., Buffalo, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Grinnell Co., Inc., Providence, R. I.
HERRmidifier Co., Lancaster, Pa.
Lennox Industries Inc., Des Moines, Ia.
Lennox Industries Inc., Marshalltown, Ia.
Maid-O'-Mist, Inc., Chicago, Ill.
Marlo Coil Co., St. Louis, Mo.
Murray Mfg. Co., D. J., Wausau, Wis.
Parks-Cramer Co., Fitchburg, Mass.
R. I. Humidifier & Ventilating Co., Inc., Cambridge, Mass.
Roberson, Inc., Seattle, Wash.
Ross Sprinkler Co., Rosemead, Calif.
Spray Engineering Co., Burlington, Mass.
Spraying Systems Co., Bellwood, Ill.
Supreme Electric Products Corp., Rochester, N. Y.
Walton Laboratories, Inc., Irvington, N. J.
Water Cooling Corp., New York, N. Y.

HUMIDIFIERS FOR RADIATORS AND CONVECTORS

Maid-O'-Mist, Inc., Chicago, Ill.

HUMIDIFIERS, RADIATOR VENT VALVE

G & H Mfg. Co., Philadelphia, Pa.
Maid-O'-Mist, Inc., Chicago, Ill.

HUMIDIFIERS, UNIT, ROOM TYPE

(Without Heating)

Abbeon Supply Co., Jamaica, N. Y.
Albion Div., McGraw-Edison Co., Albion, Mich.
American Moistening Co., Cleveland, N. C.
Armstrong Machine Wks., Three Rivers, Mich.
Bahnson Co., Winston-Salem N. C.
Fresh'nd-Aire Co., Div. of Corey Corp., Chicago, Ill.
Grinnell Co., Inc., Providence, R. I.
HERRmidifier Co., Lancaster, Pa.
Kelvinator Div., American Motors Corp., Detroit, Mich.
Murray Mfg. Co., D. J., Wausau, Wis.
Pollen Ex Co., Chicago, Ill.
Research Products Corp., Madison, Wis.
Rotherm Engineering Co., Inc., Chicago, Ill.
Skuttle Mfg. Co., Milford, Mich.
Spraying Systems Co., Bellwood, Ill.
Standard Engineering Wks., Pawtucket, R. I.
Swan Humidifier Co., Ballston Spa, N. Y.
Walton Laboratories, Inc., Irvington, N. J.
Water Cooling Corp., New York, N. Y.

HUMIDIFYING RADIATORS

See Radiators, Humidifying

HUMIDISTATS

American Instrument Co., Inc., Silver Spring, Md.
Arvin Industries, Inc., Columbus, Ind.
Bahnson Co., Winston-Salem, N. C.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Friez Instrument Div., Bendix Corp., Baltimore, Md.
General Controls Co., Glendale, Calif., and Skokie, Ill.
General Electric Co., Wiring Device Dept., Electric Comfort Heating Section, Louisville, Ky.
Johnson Service Co., Milwaukee, Wis.
Kingston National Controls Div., Kingston Industries, Inc., Medfield, Mass.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Parks-Cramer Co., Fitchburg, Mass.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Standard Engineering Wks., Pawtucket, R. I.
Trerice Co., H. O., Detroit, Mich.
Universal Dynamics Corp., Arlington, Va.
Walton Laboratories, Inc., Irvington, N. J.

HUMIDITY INDICATORS

See Indicator-Controllers, Relative Humidity; Psychrometers

HUMIDITY RECORDERS

See Recorders, Humidity

HUMIDITY AND TEMPERATURE CONTROLS

See Humidistats; Recorder-Controllers; Thermostats

HYDRAULIC CLUTCHES

See Drives, Fluid or Hydraulic, for Power Transmission

HYDRAULIC PIPE PUSHERS

See Pushers, Pipe, Hydraulic

HYDRAULIC SPEED CHANGERS

See Changers, Speed, Hydraulic Coupling

HYGROMETERS

Abbeon Supply Co., Jamaica, N. Y.
Airguide Instrument Co., Chicago, Ill.
Airserco Mfg. Co., Pittsburgh, Pa.
American Instrument Co., Inc., Silver Spring, Md.
American Moistening Co., Cleveland, N. C.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Foxboro Co., Foxboro, Mass.
G. M. Mfg. Co., New York, N. Y.
Garden City Instruments, Inc., Evanston, Ill.
General Scientific Equipment Co., Philadelphia, Pa.
Green Instruments, Inc., Henry J., Westbury, N. Y.
H-B Instrument Co., Philadelphia, Pa.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Johnson Service Co., Milwaukee, Wis.
Manufacturers Engineering & Equipment Corp., Hatboro, Pa.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Tagliabue Div., Marshalltown Mfg., Inc., Marshalltown, Ia.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Weksler Instruments Corp., Freeport, L. I., N. Y.
Will Corp., Rochester, N. Y.

HYGROSTATS

See Humidistats

IDENTIFICATION MARKERS (For Piping Services)

Acromark Co., Elizabeth, N. J.
Anodyne, Inc., Div. North Shore Nameplate, N. Miami Beach, Fla. (also for wiring and conduit systems)
Brady Co., W. H., Milwaukee, Wis. (self-sticking)
Chase Brass & Copper Co., Waterbury, Conn.
Green Instrument Co., Inc., Cambridge, Mass.

Markal Co., Chicago, Ill.
Meyercord Co., The, Chicago, Ill. (for piping service)
Pee Cee Tape & Label Co., Los Angeles, Calif.
Seton Name Plate Co., Inc., New Haven, Conn.
Westline Products Div. of Western Lithograph Co., Los Angeles, Calif.
Wilmington Plastics Co., Wilmington, Del.
Zaco Laboratories, Cleveland, O.

IMMERSION THERMOSTATS

See Thermostats, Immersion

INCINERATORS, FOR LARGE BUILDINGS

Canton Stoker Corp., Canton, O.
Eclipse Fuel Engineering Co., Rockford, Ill. (burners)
Flynn & Emrich Co., Baltimore, Md. (stoker type)
Goder, Inc., Joseph, Chicago, Ill.
Incinerator Products Co., Detroit, Mich.
Industrial Sheet Metal Work, Chicago, Ill.
Morse Boulger Inc., New York.
Plibrico Co., Chicago, Ill.
Silent Glow Oil Burner Co., Hartford, Conn.
Syrall Mfg. Co., Syracuse, N. Y.
Winnen Incinerator Co., Bedford, O.

INDICATING THERMOMETERS

See Thermometers, Indicating

INDICATOR-CONTROLLERS, PRESSURE

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
Aircraft Porous Media, Inc., Glen Cove, N. Y.
American Meter Co., Inc., Philadelphia, Pa.
American-Standard Controls Div., Detroit, Mich.
Assembly Products, Inc., Chesterland, O.
Automatic Control Co., St. Paul, Minn.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Daytronic Corp., Dayton, O.
Dickson Co., The, Chicago, Ill.
Dillon & Co., Inc., W. C., Van Nuys, Calif. (mechanical)
Fischer & Porter Co., Warminster, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Evanston, Ill.
General Controls Co., Glendale, Calif.
Giannini & Co., Inc., G. M., Pasadena, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hastings-Raydist, Inc., Hampton, Va.
Hays Corp., Michigan City, Ind.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Leeds & Northrup Co., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Schaevitz Engineering, Camden, N. J.
Scientific Instrument Co., Detroit, Mich.
Sostman & Co., H. E., Cranford, N. J.
Taylor Instrument Companies, Rochester, N. Y.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I., N. Y.

INDICATOR-CONTROLLERS, RELATIVE HUMIDITY

American Instrument Co., Inc., Silver Spring, Md.
American Moistening Co., Cleveland, N. C.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Evanston, Ill.
Johnson Service Co., Milwaukee, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
United Electric Controls Co., Watertown, Mass.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.
Universal Dynamics Corp., Arlington, Va.
Weksler Instruments Corp., Freeport, L. I., N. Y.

INDICATOR-CONTROLLERS, TEMPERATURE

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.
American Instrument Co., Inc., Silver Spring, Md.
American Meter Co., Inc., Philadelphia, Pa.
American-Standard Controls Div., Detroit, Mich.
Assembly Products, Inc., Chesterland, O.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Century Instrument Co., Detroit, Mich.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Defender Instrument & Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
EPIC, Inc., New York, N. Y.
Fenwal Inc., Ashland, Mass.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Garden City Instruments, Inc., Evanston, Ill.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Johnson Service Co., Milwaukee, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Markal Co., Chicago, Ill.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Partlow Corp., The, New Hartford, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Sarco Co., Inc., New York, N. Y.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Taylor Instrument Companies, Rochester, N. Y.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Thwing-Albert Instrument Co., Philadelphia.
Tipptronics, Inc., Chagrin Falls, O.
Trerice Co., H. O., Detroit, Mich.
United Electric Controls Co., Watertown, Mass.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I.
West Instrument Corp., Chicago, Ill.
Wiegand Co., Edwin L., Pittsburgh, Pa.

INDICATORS, CARBON DIOXIDE, BOILER ROOM

For Portable CO_2 Analyzers, See Analyzers, Carbon Dioxide, Portable

Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Defender Instrument and Regulator Co., Boody, Ill.
Ellison Draft Gage Co., Chicago, Ill.
Engelhard Industries, Inc., Instruments & Systems Div., East Newark, N. J.
General Scientific Equipment Co., Philadelphia, Pa.
Hays Corp., Michigan City, Ind.
Mine Safety Appliances Co., Pittsburgh, Pa.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Uehling Instrument Co., Paterson, N. J.
Victory Engineering Corp., Union, N. J.

INDICATORS, DEW POINT

Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.
American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Desomatic Products Div., Atlantic Research Corp., Falls Church, Va.
Foxboro Co., Foxboro, Mass.
Gelman Instrument Co., Chelsea, Mich.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Pittsburgh Lectrodryer Div., McGraw-Edison Co., Pittsburgh, Pa.
Weighing & Controls, Inc., Hatboro, Pa.

INDICATORS, FLOW

See Meters, Flow

INDICATORS, LIQUID LEVEL, BOILER AND TANK

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American-Standard Controls Div., Detroit, Mich.
Automatic Control Co., St. Paul, Minn.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Automation Products, Inc., Houston, Tex.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bristol Co., The, Waterbury, Conn.
Defender Instrument & Regulator Co., Boody, Ill.
Ernst Water Column & Gauge Co., Livingston, N. J.
Fischer & Porter Co., Warminster, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foxboro Co., Foxboro, Mass.
Frick Co., Waynesboro, Pa.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hanna Engineering Works, Chicago, Ill.
Hays Corp., Michigan City, Ind.
Healy Ruff Co., St. Paul, Minn.
Henry Valve Co., Melrose Park, Ill.
Instruments, Inc., Tulsa, Okla.
Magnetrol, Inc., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Milton Roy Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
New York Air Valve Corp., Brooklyn, N. Y.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.

Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Petrometer Corp., Long Island City, N. Y.
Phillips & Co., H. A., Chicago, Ill.
Photobell Co., Inc., New York, N. Y.
Reliance Gauge Column Co., Cleveland, O.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Schaevitz Engineering, Camden, N. J.
Swift Lubricator Co., Inc., Elmira, N. Y.
Tankit Co., The, Newark, N. J.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
Uehling Instrument Co., Paterson, N. J.
Worner Electronic Devices, Rankin, Ill.
Yarnall-Waring Co., Philadelphia, Pa.

INDICATORS, pH

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American Instrument Co., Inc., Silver Spring, Md.
Analytical Measurements, Inc., Chatham, N. J.
Assembly Products, Inc., Chesterland, O.
Berna Corp., Long Island City, N. Y.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Ernst Water Column & Gauge Co., Livingston, N. J.
Foxboro Co., Foxboro, Mass.
Hays Corp., The, Michigan City, Ind.
Leeds & Northrup Co., Philadelphia, Pa.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Aniline Div., Allied Chemicals Corp., New York, N. Y.
Thomas Co., Arthur H., Philadelphia, Pa.
Wallace & Tiernan Inc., Belleville, N. J.
Will Corp., Rochester, N. Y.

INDICATORS, RELATIVE HUMIDITY

Abbeon Supply Co., Jamaica, N. Y.
Airguide Instrument Co., Chicago, Ill.
Airserco Mfg. Co., Pittsburgh, Pa.
American Instrument Co., Inc., Silver Spring, Md.
Andrew Technical Supply Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
El-Tronics, Inc., Philadelphia, Pa.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Evanston, Ill.
Gelman Instrument Co., Chelsea, Mich.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Hili & Co., E. Vernon, Lake Geneva, Wis.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Serdex, Inc., Boston. Mass.
Skuttle Mfg. Co., Milford, Mich.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.
Universal Dynamics Corp., Arlington, Va.
Universal Instrument Co., Brentwood, Md.
Walton Laboratories, Inc., Irvington, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.

INDICATORS, SMOKE

Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Philadelphia, Pa.
Clark Controller Co., Cleveland, O.
Cleveland Controls, Inc., Cleveland, O.
De-Tec-Tronic Corp., Chicago, Ill.
Edwards, L. V., Rockville Center, N. Y.
Electronics Corp. of America, Cambridge, Mass.
Fuel Watchman, Flushing, N. Y.
Gelman Instrument Co., Chelsea, Mich.
General Blower Co., Philadelphia, Pa.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hays Corp., The, Michigan City, Ind.
Photobell Co., Inc., New York, N. Y.
Photomation, Inc., Bergenfield, N. J.

Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Worner Electronic Devices, Rankin, Ill.

INDICATORS, SOUND LEVEL

Airserco Mfg. Co., Pittsburgh, Pa.
Mine Safety Appliances Co., Pittsburgh, Pa.
Scott, Inc., H. H., Inst. Div., Maynard, Mass.
Simpson Electric Co., Chicago, Ill.

INDICATORS, SPECIFIC GRAVITY, REMOTE READING

Bristol Co., The, Waterbury, Conn.
Hays Corp., The, Michigan City, Ind.
Instruments, Inc., Tulsa, Okla.
Meriam Instrument Co., The, Cleveland, O.
Permutit Co., The, Div. of Pfaudler Permutit, Inc., New York, N. Y.
Petrometer Corp., Long Island City, N. Y.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Schutte and Koerting Co., Buck County, Pa.
Uehling Instrument Co., Paterson, N. J.

INDICATORS, VALVE POSITION

Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bristol Co., The, Waterbury, Conn.
Crane Co., Chicago, Ill.
Fairbanks Co., The, New York, N. Y.
General Controls Co., Glendale, Calif.
Hanna Engineering Works, Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Sostman & Co., H. E., Cranford, N. J.
Stockham Valves & Fittings, Birmingham, Ala.
Tejax Engineering Corp., Pawtucket, R. I.

INDIRECT HEATING SURFACE

See Surface, Finned, Heating

INDIRECT WATER HEATERS

See Heaters, Water, Indirect

INDUCED DRAFT FANS

See Fans, Mechanical Draft, for Boilers

INDUSTRIAL AIR CONDITIONERS

See Unitary Air Conditioners, Industrial Type

INDUSTRIAL DRYERS

See Dryers, Industrial

INFRA-RED HEATERS

See Heaters, Suspended, Radiant, Electric and Heaters, Suspended, Radiant, Gas-Fired

INJECTOR RECIRCULATORS FOR REFRIGERANTS

Phillips & Co., H. A., Chicago, Ill.

INSERTS, CONCRETE

Binkley Bolted Framing Sales Co., Wright City, Mo.
Carpenter & Paterson, Inc., Cambridge, Mass.
Elcen Metal Products Co., Franklin Park, Ill.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Gateway Engineering Co., Chicago, Ill.
Globe Products, Huppower Div., Hupp Corp., Detroit, Mich.
Grabler Mfg. Co., Cleveland, O.
Healy Ruff Co., St. Paul, Minn.
Hilti, Inc., Rapid Fastening Systems, Stamford, Conn.
Industrial Tubular Equipment Co., Div. of Idaho Maryland Industries, Inc., North Hollywood, Calif.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Modern Hanger Corp., The, Cleveland, O.
Mult-A-Frame Corp., Detroit, Mich.
Phillips Drill Co., Michigan City, Ind.
Republic Steel Corp., Cleveland, O.
Rockwood Sprinkler Co., Worcester, Mass.
South Chester Corp., Southco Div., Lester, Pa.
Steel City Electric Co., Pittsburgh, Pa.
Unistrut Products Co., Chicago, Ill.

INSERTS, METAL FOR PLASTIC PIPE

Clayton Mark & Co., Evanston, Ill.

Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Plastiline, Inc., Pompano Beach, Fla.
Star Tubular Products Co., Chicago, Ill.
Telsco Fittings Div., Dallas, Tex.
Union Malleable Mfg. Co., Ashland, O.

INSTANTANEOUS WATER HEATERS

See Heaters, Water, Steam, Instantaneous

INSTRUMENTS, SOLAR SENSING, FOR HEATING AND AIR CONDITIONING

Barber-Colman Co., Rockford, Ill.
Beckman & Whitley, Inc., San Carlos, Calif.
Construction Specialties, Inc., Cranford, N. J.
Johnson Service Co., Milwaukee, Wis.
Palmer Thermometers, Inc., Cincinnati, O.
Powers Regulator Co., Skokie, Ill.
Thermon Mfg. Co., Houston, Tex.

INSTRUMENTS, TEMPERATURE MEASURING

Atkins Technical, Inc., Cleveland, O.
Bailey Meter Co., Cleveland, O.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Foxboro Co., Foxboro, Mass.
General Controls Co., Glendale, Calif.
Hays Corp., The, Michigan City, Ind.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Pyrodyne, Inc., Los Angeles, Calif.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Republic Flow Meter Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Thermon Mfg. Co., Houston, Tex.
Thwing-Albert Instrument Co., Philadelphia, Pa.
Tipptronics, Inc., Chagrin Falls, O.

INSULATING CONCRETE

See Concrete, Insulating

INSULATION, FOR AIR CONDITIONING EQUIPMENT

American Felt Co., Glenville, Conn. (felt)
Dyfoam Corp., Newcastle, Pa. (foamed polystyrene)
Foamade Industries, Oak Park, Mich.
Glo-Brite Products, Inc., Chicago, Ill. (foamed plastic)
Johns-Manville Corp., New York, N. Y.
Lockport Mills, Inc., Lockport, N. Y.
Nicolet Industries, Inc., Florham Park, N. J. (asbestos)
Silvercote Products, Inc., Chicago, Ill.

INSULATION ANCHORS AND ADHESIVES

See Fasteners, Insulation

INSULATION, BOILER, TANK, AND EQUIPMENT

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
American Hair & Felt Co., Chicago, Ill.
Armstrong Contracting & Supply Corp., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Badham Insulation Co., Inc., Birmingham, Ala.
Baldwin-Ehret-Hill, Inc., Trenton, N. J. (mineral wool blankets, monoblock, super powerhouse cement, #1 cement)
Bigelow Liptak Corp., Detroit, Mich.
Bird-Archer Co., Philadelphia, Pa.
Botfield Refractories Co., Philadelphia, Pa.
Carey Mfg. Co., Philip, Cincinnati O.
Dayco Corp., Dayton, O. (urethane — flexible; rigid; sprayed)
Dow Chemical Co., The, Midland, Mich.
Eagle-Picher Co., Cincinnati, O.
Emjay Maintenance Engineers, Rutherford, N. J.

Forty-Eight Insulations, Inc., Aurora, Ill.
Grant Wilson, Inc., Chicago, Ill.
Green Fire Brick Co., Mexico, Mo.
Gustin-Bacon Mfg. Co., Kansas City, Mo. (glass fiber)
International Vermiculite Co., Girard, Ill.
Isoflex Corp., Burlingame, Calif.
Johns-Manville Corp., New York, N. Y.
Keasbey Co., Robert A., New York, N. Y. (industrial rock wool reinforced with wire)
Keasbey & Mattison Co., Ambler, Pa.
Lockport Mills, Inc., Lockport, N. Y.
MMM, Inc., Houston, Tex. (low temperature)
Monsanto Chemical Co., St. Louis, Mo. (silica aerogel)
Mundet Cork Corp., North Bergen, N. J. (85% magnesia calcium silicate)
National Cork Co., Englewood, N. J. (Corkboard)
Nicolet Industries, Inc., Florham Park, N. J. (asbestos)
North American Asbestos Corp., Chicago, Ill.
Owens-Corning Fiberglas Corp., New York, N. Y. (block or board)
Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif. (85% magnesia; calcium silicate; high temperature)
Pacific Lumber Co., The, San Francisco, Calif.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif. (cork, hair felt)
Pittsburgh Corning Corp., Pittsburgh, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Plibrico Co., Chicago, Ill.
Poe Co., C. W., Cleveland, O. (mineral wool)
Quigley Co., Inc., New York, N. Y.
Rector Mineral Trading Corp., New York, N. Y. (cork)
Reflectal Corp. Subsidiary, Borg-Warner Corp., Chicago, Ill.
Refractory & Insulation Corp., New York, N. Y. (Blanket, block, cement)
Robinson Industries, Coleman, Mich. (expanded plastic)
Ruberoid Co., New York, N. Y. (Asbestos, calsilite)
Smith & Kanzler Corp., Linden, N. J.
Standard Asbestos Mfg. Co., Chicago, Ill.
Standard Fuel Engineering Co., Detroit, Mich.
Thermo-Sound Products, Div. of Kittell-Lacy, Inc., El Monte, Calif.
Tufflite Plastics, Inc., Ballston Spa, N. Y. (low temp.)
United Cork Co., Kearney, N. J. (Cork)
United States Mineral Wool Co., Stanhope, N. J. (loose wool)
Walker Jamar Co., Duluth, Minn.
Zonolite Co., Chicago, Ill. (plastic)

INSULATION, BUILDING

Acme Asbestos Covering & Flooring Co., Chicago, Ill. (Rock wool)
Alumiseal Corp., New York, N. Y. (reflective)
American Flange & Mfg. Co., Inc., New York, N. Y. (Metal sheets)
Armstrong Cork Co., Lancaster, Pa. (fibre board, rigid foamed plastic board)
Badham Insulation Co., Inc., Birmingham, Ala.
Baldwin-Ehret-Hill, Inc., Trenton, N. J. (spun mineral wool blankets)
Barrett Div., Allied Chemical Corp., New York, N. Y. (mineral wool batts or blankets; standard or reflective)
Carey Mfg. Co., Philip, Cincinnati, O. (Rock wool)
Carney Co., Inc., The, Mankato, Minn. (blankets; loose fill)
Celotex Corp., The, Chicago, Ill. (flexible, semi-rigid, and rigid)
Chamberlin Co. of America, Detroit, Mich.
Dayco Corp., Dayton, O. (urethane - flexible; rigid; sprayed)
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y. (vapor barrier materials for insulation)
Dow Chemical Co., The, Midland, Mich.
Dyfoam Corp., Newcastle, Pa. (foamed polystyrene)
Eagle-Picher Co., Cincinnati, O. (Loose, fill, batt and granulated)
Emjay Maintenance Engineers, Rutherford, N. J.
Fibrous Products Div., Union Asbestos & Rubber Co., Bloomington, Ill. (inorganic board material)
Flintkote Co., The, New York, N. Y. (glass wool)
Forest-Wool Insulation Co., Inc., Marshall, Mich. (blown and blanket cellulose)
Forty-Eight Insulations, Inc., Aurora, Ill. (wool batts, copr-fibre)
Gustin-Bacon Mfg. Co., Kansas City, Mo. (glass fiber)
Infra Insulation, Inc., West Nyack, N. Y. (parallel and accordion—reflective, asbestos)
Insul-Cell Mfg. Co., Muncie, Ind. (cellulose fibre)
Insul-Wool Insulation Co., St. Louis, Mo. (cellulose)
International Vermiculite Co., Girard, Ill. (Loose fill)
Johns-Manville Corp., New York, N. Y.
Johnston Foil Mfg. Co., St. Louis, Mo. (Foil, aluminum, tin, lead)
Lockport Mills, Inc., Lockport, N. Y.
Mearlcrete Div., Mearl Chemical Corp., Roselle Park, N. J. (roof fill, floor fill, perimeter)
Minnesota & Ontario Paper Co., Insulite Div., Minneapolis, Minn. (wood fibre)
Mundet Cork Corp., North Bergen, N. J.
National Cork Co., Englewood, N. J. (Corkboard)
National Gypsum Co., Buffalo, N. Y. (mineral wool, perimeter insulation)
Nelson Mfg. Co., B. F., Minneapolis, Minn.
North American Asbestos Corp., Chicago, Ill.
Owens-Corning Fiberglas Corp., New York, N. Y. (batts or blankets)
Pacific Lumber Co., The, San Francisco, Calif.
Pal-O-Pak Insulation Co., Inc., Hartland, Wis. (loose fill, cellulose)
Pittsburgh Corning Corp., Pittsburgh, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Plastergon Wall Board Co., Buffalo, N. Y. (Rigid board)
Poe Co., C. W., Cleveland, O. (mineral wool)
Rector Mineral Trading Corp., New York, N. Y. (cork)
Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill.
Refractory & Insulation Corp., New York, N. Y. (Rock, slag wool)
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y. (foil)
Reynolds Metals Co., Richmond, Va.
Richkraft Co., Chicago, Ill. (reflective)
Robinson Industries, Coleman, Mich. (expanded plastic)
Rubatex Div., Great American Industries, Inc., Bedford, Va. (low temperature)
Ruberoid Co., New York, N. Y. (glass wool)
Schlegel Mfg. Co., Rochester, N. Y. (for weather-stripping doors & windows)
Silvercote Products, Inc., Chicago, Ill.
Sprayo Flake Co., Chicago, Ill.
Standard Asbestos Mfg. Co., Chicago, Ill. (Asbestos, hairfelt)
Tennessee Products and Chemical Corp., Nashville, Tenn. (mineral wool)
Thiokol Chemical Corp., Trenton, N. J. (foaming resins)
United Cork Companies, Kearny, N. J. (Cork and expanded polystyrene)
United States Gypsum Co., Chicago, Ill. (Wool and USG Ins. board)
United States Mineral Wool Co., Stanhope, N. J. (Mineral wool, granulated wool, loose wool)
United States Pipe & Foundry Co., Birmingham, Ala. (mineral wool-batts and pellets)
Wood Conversion Co., St. Paul, Minn.
Zonolite Co., Chicago, Ill. (Loose fill)

INSULATION, DUCT, SOUND DEADENING

For Application Inside Duct

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Air-O-Plastik Corp., Union City, N. J.
American Felt Co., Glenville, Conn. (felt)
American Hair & Felt Co., Chicago, Ill.
Armstrong Contracting & Supply Corp., Chicago, Ill.
Badham Insulation Co., Inc., Birmingham, Ala.
Baldwin-Ehret-Hill, Inc., Trenton, N. J.
Celotex Corp., The, Chicago, Ill.
Cordo Chemical Corp., Norwalk, Conn. (vinyl coated fabric)
Emjay Maintenance Engineers, Rutherford, N. J.
Felters Company, The, Boston, Mass. (wool felt)
General Sound Control, Inc., Hollydale, Calif. (prefabricated)
Grant Wilson, Inc., Chicago, Ill.
Gustin-Bacon Mfg. Co., Kansas City, Mo. (glass fiber)
Inter-Coastal Paint Corp., East St. Louis, Ill.
Johns-Manville Corp., New York, N. Y. (fiber glas)
Keasbey & Mattison Co., Ambler, Pa.
Lockport Mills, Inc., Lockport, N. Y.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Minnesota & Ontario Paper Co., Insulite Div., Minneapolis, Minn. (wood fibre board)
Mortell Co., J. W., Kankakee, Ill.
Mundet Cork Corp., North Bergen, N. J. (glass fibre, cork)
Owens-Corning Fiberglas Corp., New York, N. Y. (flexible or board)
Rector Mineral Trading Corp., New York, N. Y. (cork)
Silvercote Products, Inc., Chicago, Ill.
Sound Reduction Corp., East Hartford, Conn. (sound absorbers)
Sprayo-Flake Co., Chicago, Ill.
Thompson and Co., Oakmont, Pa.
Wood Conversion Co., St. Paul, Minn.
Zonolite Co., Chicago, Ill.

INSULATION, DUCT, THERMAL

Acme Asbestos Covering & Flooring Co., Chicago, Ill. (Asbestos)
American Engineering Co., Kansas City, Mo.
American Flange & Mfg. Co., Inc., New York, N. Y.
American Hair & Felt Co., Chicago, Ill. (Hair felt)
Armstrong Contracting & Supply Corp., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Badham Insulation Co., Inc., Birmingham, Ala.
Baldwin-Ehret-Hill, Inc., Trenton, N. J. (semi-rigid mineral wool)
Bigelow Liptak Corp., Detroit, Mich.
Carey Mfg. Co., Philip, Cincinnati, O. (Asbestos)
Celotex Corp., The, Chicago, Ill.
Dayco Corp., Dayton, O. (urethane - flexible; rigid; sprayed)
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y. (prefab polyvinyl duct covering)
Dow Chemical Co., The, Midland, Mich.
Dyfoam Corp., Newcastle, Pa. (foamed polystyrene)
Eagle-Picher Co., Cincinnati, O. (Mineral wool blankets)
Emjay Maintenance Engineers, Rutherford, N. J.
Felters Company, The, Boston, Mass. (Wool felt)
Flintkote Co., The, New York, N. Y. (fibrated, asphalt spray on)
Forty-Eight Insulations, Inc., Aurora, Ill. (rigid board, aloyglas)
Glo-Brite Products, Inc., Chicago, Ill. (foamed platsic)
Grant Wilson, Inc., Chicago, Ill.
Gustin-Bacon Mfg. Co., Kansas City, Mo. (glass fiber)
Hunter Mfg. Co., Aluminum Insulation Div., Bristol, Pa. (aluminum)
Infra Insulation, Inc., West Nyack, N. Y.
International Vermiculite Co., Girard, Ill. (Block)
Johns-Manville Corp., New York, N. Y. (fiber glas)
Keasbey & Mattison Co., Ambler, Pa. (Asbestos)
Lasco Industries, Montebello, Calif. (asbestos aircell and foil aircell)
Lockport Mills, Inc., Lockport, N. Y.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Minnesota & Ontario Paper Co., Insulite Div., Minneapolis, Minn. (wood fibre)
Mortell Co., J. W., Kankakee, Ill.
Mundet Cork Corp., North Bergen, N. J. (Cork, glass fiber)
National Cork Co., Englewood, N. J. (Corkboard)
Nicolet Industries, Inc., Florham Park, N. J. (asbestos)
Owens-Corning Fiberglas Corp., New York, N. Y. (Blanket or board)
Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif. (85% magnesia)
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.

Pittsburgh Coke & Chemical Co., Pittsburgh, Pa.
Pittsburgh Corning Corp., Pittsburgh, Pa.
Plasti-Foam Corp., Hoboken, N. J. (expanded polystyrene)
Poe Co., C. W., Cleveland, O. (mineral wool)
Quigley Co., Inc., New York, N. Y.
Rector Mineral Trading Corp., New York, N. Y. (cork)
Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill.
Refractory & Insulation Corp., New York, N. Y. (Mineral wool blanket)
Reynolds Metals Co., Richmond, Va.
Rubatex Div., Great American Industries, Inc., Bedford, Va. (rubber)
Ruberoid Co., New York, N. Y.
Silvercote Products, Inc., Chicago, Ill.
Smith & Kanzler Corp., Linden, N. J. (Asbestos air cell type)
Sprayo-Flake Co., Chicago, Ill.
Standard Asbestos Mfg. Co., Chicago, Ill. (Asbestos, hair felt)
Taft Jenkins Co., Inc., Holyoke, Mass.
Thermo-Sound Products, Div. of Kittell-Lacy, Inc., El Monte, Calif. (blanket type)
Tufflite Plastics, Inc., Ballston Spa, N. Y. (low temp.)
United Cork Companies, Kearny, N. J. (Cork and expanded polystyrene)
United States Mineral Wool Co., Stanhope, N. J.
Wood Conversion Co., St. Paul, Minn. (cold)
Zippertubing Co., The, Los Angeles, Calif. (glass fiber)

INSULATION FASTENERS AND ANCHORS

See Fasteners, Insulation

INSULATION, FINISHING CEMENT

Acme Asbestos Covering & Floor Co., Chicago, Ill (magnesia; air cell woolfelt)
Baldwin-Ehret-Hill, Inc., Trenton, N. J.
Bigelow Liptak Corp., Detroit, Mich.
Carey Mfg. Co., Philip, Cincinnati, O.
Eagle Picher Co., Cincinnati, O.
Forty-Eight Insulations, Inc., Aurora, Ill.
Grant Wilson, Inc., Chicago, Ill.
Johns-Manville Corp., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Moore Inc., Goodloe E., Danville, Ill.
Mundet Cork Corp., N. Bergen, N. J. (mineral wool)
National Cork Co., Englewood, N. J.
Nicolet Industries, Inc., Florham Park, N. J. (asbestos)
North American Asbestos Corp., Chicago, Ill.
Refractory & Insulation Corp., New York, N. Y.
Ruberoid Co., New York, N. Y. (asbestos)
St. Clair Rubber Co., Detroit, Mich.
Standard Asbestos Mfg. Co., Chicago, Ill.
Thermold Products Co., Grandview, Mo.
United States Mineral Wool Co., Stanhope, N. J.
Urethane Foam Div., Rainbow Industries, Inc., Butler, Pa.

INSULATION, PIPE, AND TUBING

Acme Asbestos Covering & Flooring Co., Chicago, Ill. (magnesia)
American Hair & Felt Co., Chicago, Ill.
Armstrong Contracting & Supply Corp., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa. (Cork, flexible foamed plastic)
Atlas Mineral Products Co., Mertztown, Pa.
Badham Insulation Co., Inc., Birmingham, Ala.
Baldwin-Ehret-Hill, Inc., Trenton, N. J. (mineral wool; #100 & #101 pipe covering, 85% magnesia pipe insulation, calcium silicate pipe insulation)
Carey Mfg. Co., Philip, Cincinnati, O. (Asbestos, magnesia)
Chase & Sons, Inc., North Quincy, Mass.
Dayco Corp., Dayton, O. (urethane—flexible; rigid; sprayed)
Delaware Insulation Co., Wilmington, Del. (urethane)
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y. (prefab polyvinyl pipe insulation and finish)
Dow Chemical Co., The, Midland, Mich.
Dyfoam Corp., Newcastle, Pa. (foamed polystyrene)
Eagle-Picher Co., Cincinnati, O. (glass wool)
Fibrous Glass Products, Inc., A Subsid. of Pall Corp., Alpa Plaza, Hicksville, N. Y., (fiberglass)
Forty-Eight Insulations, Inc., Aurora, Ill.
General Aluminum Supply Co., Kansas City, Mo.
Fibrous Products Div., Union Asbestos & Rubber Co., Bloomington, Ill. (asbestos fiber)
Glo-Brite Products, Inc., Chicago, Ill. (foamed plastic)
Goodrich Co., B. F., Shelton, Conn. (cellular rubber)
Grant Wilson, Inc., Chicago, Ill. (85% magnesium, air-cell, woolfelt, anti-sweat, frost proof, sponge felt.)
Gustin-Bacon Mfg. Co., Kansas City, Mo. (Molded fine glass fiber)
Hunter Mfg. Co., Aluminum Insulation Div., Bristol, Pa. (reflective)
Industrial Laminates Div., Fabric Distributing Co., New York, N. Y.
Infra Insulation, Inc., West Nyack, N. Y.
International Vermiculite Co., Girard, Ill.
Jarrow Products, Inc., Chicago, Ill. (sponge tubing)
Johns-Manville Corp., New York, N. Y.
Keasbey Co., Robert A., New York, N. Y. (Asbestos and cork) (hair felt on cold side)
Keasbey & Mattison Co., Ambler, Pa. (Asbestos, calcium silicate)
Lockport Mills, Inc., Lockport, N. Y.
MMM, Inc., Houston, Tex. (low temperature)
Met-L-Wood Corp., Chicago, Ill. (composition material faced with sheet metal)
Minnesota Mining & Mfg. Co., St. Paul, Minn. (Spray)
Mortell Co., J. W., Kankakee, Ill. (plastic cork)
Mundet Cork Corp., North Bergen, N. J. (85% magnesia calcium silicate, 100% pure cork; glass fiber; expanded polystyrene)
Mystik Adhesive Products, Inc., Chicago, Ill.
National Cork Co., Englewood, N. J. (Cork)
Nicolet Industries, Inc., Florham Park, N. J. (Asbestos)
North American Asbestos Corp., Chicago, Ill.
Owens-Corning Fiberglas Corp., New York, N. Y. (perforated or flexible)
Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif. (85% magnesia; calcium silicate; high temperature)
Pacific States Felt Mfg. Co., Inc., San Francisco, Calif.
Pittsburgh Coke & Chemical Co., Pittsburgh, Pa. (asphalt-cork)
Pittsburgh Corning Corp., Pittsburgh, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Poe Co., C. W., Cleveland O. (mineral wool)
Presstite Div., American-Marietta Co., St. Louis, Mo. (tape)
Rector Mineral Trading Corp., New York, N. Y. (cork)
Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill. (foil and corrugated paper)
Rhopac, Inc., Skokie, Ill.
Robinson Industries, Coleman, Mich. (expanded plastic)
Rubatex Div., Great American Industries, Inc., Bedford, Va. (rubber)
Ruberoid Co., New York, N. Y. (Asbestos, calsilite)
Silvercote Products, Inc., Chicago, Ill. (foamed)
Smith & Kanzler Corp., Linden, N. J. (Asbestos air cell, wool felt and hair felt)
Standard Asbestos Mfg. Co., Chicago, Ill.
Taft Jenkins Co., Inc., Holyoke, Mass.
Tufflite Plastics, Inc., Ballston Spa, N. Y. (low temp.)
United Cork Companies, Kearny, N. J. (cork and expanded polystyrene)
Uni-Crest Div., United Cork Companies, Kearny, N. J.
United States Rubber Co., New York, N. Y. (asbestos)
Virginia Smelting Co., West Norfolk, Va.
Walker Jamar Co., Duluth, Minn.
Waterproof Insulation Corp., Baltimore, Md.
Wood Conversion Co., St. Paul, Minn. (cold)
Zippertubing Co., Los Angeles, Calif.

INSULATION, PIPE, UNDERGROUND

American Gilsonite Co., Salt Lake City, Utah
Barrett Div., Allied Chemical Corp., New York, N. Y.
Concrete Thermal Casings, Seattle, Wash.
Dow Chemical Co., The, Midland, Mich.
Durant Insulated Pipe Co., E. Palo Alto, Calif.
Durant Insulated Pipe Co., Inc., Cleveland.
Fibrous Products Div., Union Asbestos & Rubber Co., Bloomington, Ill.
Glo-Brite Products, Inc., Chicago, Ill. (foamed plastic)
Grant Wilson, Inc., Chicago, Ill.
Insul-Fil Co., Inc., Div. Miracle Adhesives Corp., Bellmore, Long Island, N. Y.
Mearlcrete Div., Mearl Chemical Corp., Roselle Park, N. J.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Owens-Corning Fiberglas Corp., New York.
Pittsburgh Corning Corp., Pittsburgh, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Porter & Co., Inc., H. W., Newark, N. J.
Ric-wiL, Inc., Barberton, O. (hot or cold)
Robinson Industries, Coleman, Mich. (expanded plastics)
Tufflite Plastics, Inc., Ballston Spa, N. Y. (low temp.)
Williamson, Inc., T. D., Tulsa, Okla.
Ziegler & Co., G. S., Great Neck, N. Y.

INTAKES FOR OUTDOOR AIR, WALL OR ROOF, EQUIPPED WITH FILTERS

Kirk & Blum Mfg. Co., Cincinnati, O.
Muckle Mfg. Co., Owatonna, Minn.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Titus Mfg. Corp., Waterloo, Ia.
Union Damper Co., The, Union, Ill.

IONIZATION APPARATUS

Cochrane Corp., Philadelphia, Pa.
CRS Industries, Inc., Philadelphia, Pa.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Ionaire, Inc., San Francisco, Calif.
Vita-Aire Process Co., Inc., Milwaukee, Wis.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.
Wesix Electric Heater Co., San Francisco.
Westinghouse Electric Corp., Lamp Div., Bloomfield, N. J. (negative ion producers)

IRON BODY VALVES

See Valves, Gate; and Valves, Globe

ISOTOPES, RADIOACTIVE, FOR DETECTING LEAKS IN PIPING AND HEATING SYSTEMS

American Gas & Chemicals, Inc., Leak-Tec Div., New York, N. Y.
Tracerlab, Inc., Waltham, Mass.

JACKETED PIPE

See Pipe, Jacketed

JACKETING FOR PIPE INSULATION

See Protectors, Pipe Covering

JETS, OVERFIRE AIR, FOR SMOKE ABATEMENT

Auburn Foundry, Inc., Heating Div., Auburn, Ind.
Canton Stoker Corp., Canton, O.
Eclipse Fuel Engineering Co., Rockford, Ill.
McNeill Smoke Eliminator Co., Chicago, Ill.
North American Mfg. Co., Cleveland, O.

JOINTS, PIPE, ELECTRICAL INSULATING

Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Epco Sales, Inc., Cleveland, O.
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Union Malleable Mfg. Co., Ashland, O.
Universal Controls Corp., Dallas, Tex.

JOINTS, PIPE, EXPANSION, FOR BASEBOARD HEATING

American Tube & Controls, Inc., West Warwick, R. I.
Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.
Beacon Brass Co., Waltham, Mass.
Cook Electric Co., Chicago, Ill.
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Hoffman Specialty Mfg. Corp., Indianapolis.
Keflex Mfg. Div, of U. S. Flexible Metallic Tubing Co., San Francisco, Calif.
Kopperman & Sons, Inc., Joseph, Philadelphia, Pa.
Slant-Fine Radiator Corp., Richmond Hill, N. Y.
Standard-Thompson Corp., Waltham, Mass.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Uniflex Mfg. & Eng., Inc., Los Angeles, Calif.
Webster & Co., Warren, Camden, N. J.
Zallea Brothers, Wilmington, Del.

JOINTS, PIPE, EXPANSION, PACKLESS, METAL

Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
American Boa, Inc., New York, N. Y.
American Flow Control Corp., Houston, Tex.
Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.
Badger Fire Extinguisher Co., Methuen, Mass.
Badger Mfg. Co., Cambridge, Mass.
Cook Electric Co., Chicago, Ill.
Croll-Reynolds Engineering Co., Inc., Stamford, Conn.
Finn & Co., Inc., T. R., Hawthorne, N. J.
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
Flexrock Co., Philadelphia, Pa.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Harris & Co., Arthur, Chicago, Ill.
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co., San Francisco, Calif.
Kopperman & Sons, Inc., Joseph, Philadelphia, Pa.
Marquette Coppersmithing Co., Philadelphia, Pa.
National Valve & Mfg. Co., Pittsburgh, Pa.
Ric-wiL, Inc., Barberton, O.
Rotherm Engineering Co., Inc., Chicago, Ill.
Solar Aircraft Co., San Diego, Calif.
Standard-Thompson Corp., Waltham, Mass.
Techniflex Div., Port Jervis, N. Y.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Uniflex Mfg. & Eng., Inc., Los Angeles, Calif.
Western Piping & Engineering Co., Inc., San Francisco, Calif.
Zallea Brothers, Wilmington, Del.

JOINTS, PIPE, EXPANSION, PACKLESS, PLASTIC

Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.
Belmont Packing & Rubber Co., Philadelphia, Pa.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.
Garlock, Inc., Palmyra, N. Y. (teflon)
Uniflex Mfg. & Eng., Inc., Los Angeles, Calif.
United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J.

JOINTS, PIPE, EXPANSION, PACKLESS, RUBBER

American Flow Control Corp., Houston, Tex.
Anchor Packing Co., Philadelphia, Pa.
Belmont Packing & Rubber Co., Philadelphia, Pa.
Garlock, Inc., Palmyra, N. Y. (spool type & U type)
General Rubber Corp., Tenafly, N. J.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Mercer Rubber Co., Hamilton Sq., N. J.
Raybestos-Manhattan, Inc., Passaic, N. J.
Saussé & Co., M. W., Los Angeles, Calif.
Uniflex Mfg. & Eng., Inc., Los Angeles, Calif.
United States Rubber Co., New York, N. Y.
Vibration Mountings & Controls, Inc., Corona, N. Y.

JOINTS, PIPE, EXPANSION, SLIP

Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
American Flow Control Corp., Houston, Tex.
Badger Fire Extinguisher Co., Methuen, Mass.
Baker & Co., R. H., Los Angeles, Calif.
Clow & Sons, Inc., James B., Chicago, Ill.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.
Crane Co., Chicago, Ill.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Moran Flexible Joint Co., Div. of Railroad Products Co., Cincinnati, O.
Multiplex Mfg. Co., Berwick, Pa.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Powell Co., Wm., Cincinnati, O.
Q-P Mfg. Co., Needham Heights, Mass.
Rotherm Engineering Co., Inc., Chicago, Ill.
Royalton Co., Inc., Gasport, N. Y.
Smith-Blair, Inc., S. San Francisco, Calif.
Tube Turns Plastics, Inc., Louisville, Ky. (injection molded UPVC)
Uniflex Mfg. & Eng., Inc., Los Angeles, Calif.
Walworth Co., New York, N. Y.
Yarnall-Waring Co., Philadelphia, Pa.
Zurn Industries, Inc., Erie, Pa.

JOINTS, PIPE, FLEXIBLE, SWING AND REVOLVING

Aeroquip Corp., Marman Div., Los Angeles, Calif.
Barco Mfg. Co., Barrington, Ill.
Bordo Co., Inc., L. J., Glenside, Pa.
Chiksan Co., Brea, Calif.
Finn & Co., Inc., T. R., Hawthorne, N. J.
Flexo Supply Co., Inc., St. Louis, Mo.
Johnson Corp., The, Three Rivers, Mich.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Moran Flexible Joint Co., Div. of Railroad Products Co., Cincinnati, O.
OPW-Jordan Corp., Cincinnati, O.
Perfecting Service Co., Charlotte, N. C.
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Powell Co., Wm., Cincinnati, O.
Rotherm Engineering Co., Inc., Chicago, Ill.
Sealol Inc., Providence, R. I.
Seamlex Co., Inc., Long Island City, N. Y.
Spincraft, Inc., Milwaukee, Wis.
Uniflex Mfg. & Eng., Inc., Los Angeles, Calif.
Winkler & Sons, Inc., A. E., Milwaukee, Wis.

JOINTS, UNIVERSAL, FOR OPERATING VALVES

Blood Brothers Machine Div., Rockwell Spring and Axle Co., Allegan, Mich.
Brooks Equipment Corp., Hoboken, N. J.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Clark Flexible Link Shaft Co., Newton Highlands, Mass.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Lovejoy Flexible Coupling Co., Chicago, Ill.
Piezo Mfg. Corp., Staten Island, N. Y.
Stow Mfg. Co., Binghamton, N. Y.

KATA THERMOMETERS

See Thermometers, Kata

KITS, COMBUSTION TESTING

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Ellison Draft Gage Co., Chicago, Ill.
G. M. Mfg. Co., New York, N. Y.
Hays Corp., Michigan City, Ind.
Victory Engineering Corp., Union, N. J.

KITS, REPAIR FOR PIPES, TANKS, VALVES, FLANGES, AND DUCTS

Arco Products, Automotive Rubber Co., Detroit, Mich.
Chemical Coatings & Engineering Co., Media, Pa.
Cordo Chemical Corp., Norwalk, Conn.
Devcon Corp., Danvers, Mass
Williamson Adhesives, Inc., Skokie, Ill.

LACQUERS

See Enamels and Lacquers

LAGGING ADHESIVES

See Adhesives, for Pipe Covering

LAMPS, STERILIZING, FOR DUCT INSTALLATION

Atlantic Ultraviolet Co., Inc., Long Island City, N. Y.
Cooper Hewitt Electric Co., Div. of Sperti-Faraday, Inc., Hoboken, N. J.
Fuller Co., D. William, Chicago, Ill.
General Electric Co., Large Lamp Dept., Nela Park, Cleveland, O.
Hanovia Lamp Div., Engelhard Hanovia, Inc., Newark, N. J.
Sampson Scientific Co., Div. of the Sampson Chemical & Pigment Corp., Chicago, Ill.
Sperti Faraday, Inc., Hoboken, N. J.
Westinghouse Electric Corp., Lamp Div., Bloomfield, N. J.

LEAD PIPE

See Pipe and Tubing, Lead and Lead Alloy

LEAD SHEETS

See Sheets, Lead

LEAD TUBING

See Pipe and Tubing, Lead and Lead Alloy

LEAK DETECTORS

See Detectors, Leak, Refrigerant; Detectors, Leak, Underground Piping; Isotopes, Radioactive

LEATHER PACKING

See Packing, Leather

LIFT GATES AND LIFT TRUCKS

See Gates, Lift; Trucks, Lift

LIGHTS, PILOT AND SIGNAL

Allen-Bradley Co., Milwaukee, Wis.
Baso Inc., Milwaukee, Wis.
Benjamin Electric Mfg. Co., Des Plaines, Ill.
Clark Controller Co., Cleveland, O.
Cutler-Hammer, Inc., Milwaukee, Wis.
Dialight Corp., Brooklyn, N. Y.
Furnas Electric Co., Batavia, Ill.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
General Electric Co., Large Lamp Dept., Nela Park, Cleveland, O.
General Electric Co., Wiring Device Dept., Electric Comfort Heating Section, Louisville, Ky.
Hart Mfg. Co., The, Hartford, Conn.
Hubbell Corp., Mundelein, Ill. (for solenoid valves)
Kulka Electric Corp., Mt. Vernon, N. Y.
Pyle-National Co., The, Chicago, Ill.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Westinghouse Electric Corp., Pittsburgh, Pa.

LINE-UP PINS FOR FLANGES

See Pins, for Flange Line-Up

LININGS, TANK

Amercoat Corp., South Gate, Calif.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Argo Plastic Products, Cleveland, O.
Atlas Mineral Products Co., Mertztown, Pa.
Automotive Rubber Co., Inc., Detroit, Mich.
Bart Mfg. Corp., Belleville, N. J.
Bishopric Products Co., Cincinnati, O.
Caldwell Co., W. E., Louisville, Ky.
Carboline Co., The, St. Louis, Mo.
Chemical Coatings & Engineering Co., Media, Pa.

Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Corite-Reynolds Corp., Des Plaines, Ill. (plastic)
Corrosion Control Co., Inc., New York, N. Y.
Division Lead Co., Summit, Ill. (lead)
Elastic Porcelain Lining Corp., Rochester, N. Y.
Ellicott Fabricators, Inc., Baltimore, Md.
Emjay Maintenance Engineers, Rutherford, N. J.
Gates Engineering Co., Wilmington, Del.
Goodrich Industrial Products Co., B. F., Akron, O.
Heil Process Equipment Corp., Cleveland, O.
Heresite & Chemical Co., Manitowoc, Wis. (Pure phenolic baking type; synthetic rubber, sheet and liquid)
Industrial Filter & Pump Co., Cicero, Ill.
Interchemical Corp., Finishes Div., Newark, N. J.
Kaykor Industries, Inc., Yardville, N. J.
Knapp Mills, Inc., Long Island City, N. Y. (lead)
Knight Co., Maurice A., Akron, O.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (PVC and rubber)
Lithcote Corp., Melrose Park, Ill.
Mercer Rubber Co., Hamilton Sq., N. J.
Metalweld, Inc., Industrial Maintenance Div., Philadelphia, Pa.
Metal & Thermit Corp., Rahway, N. J.
Nazar Rubber Co., Toledo, O.
Patterson-Kelley Co., Inc., The, E. Stroudsburg, Pa. (cement)
Porce-Lin Tank Lining Co., Detroit, Mich.
Quelcor, Inc., Chester, Pa.
Raybestos-Manhattan, Inc., Passaic, N. J.
Steelcote Mfg. Co., St. Louis, Mo.
United States Rubber Co., New York, N. Y.
Ventfabrics, Inc., Chicago, Ill.
Wagner Bros., Inc., Equipment Div., Detroit, Mich.
Wilbur & Williams Co., Norwood, Mass. (acid caustic band tank lining system)

LINKS, FUSIBLE

Bar-Brook Mfg. Co., Inc., Shreveport, La.
Grinnell Co., Inc., Providence, R. I.
Hodgman Mfg. Co., Inc., Taunton, Mass.
Morse-Smith Morse Co., Watertown, Mass.
Preferred Utilities Mfg. Corp., New York, N. Y.

LIQUID AFTERCOOLERS

See Aftercoolers, for Hot Liquids

LIQUID LEVEL GAGES

See Gages, Liquid Level

LIQUID LEVEL INDICATORS

See Indicators, Liquid Level

LIQUID LEVEL RECORDERS

See Recorders, Liquid Level

LIQUID LEVEL REGULATORS

See Regulators, Liquid Level

LIQUID PRESSURE REGULATORS

See Regulators, Pressure, Liquid

LOCATORS, PIPE, WALL AND UNDERGROUND

Fisher Research Laboratory, Inc., Palo Alto, Calif.
Gardiner Electronics Co., Phoenix, Ariz.
Wilkinson Products Co., Pasadena, Calif.

LOCK FORMING MACHINES

See Machines, Pittsburgh Lock Forming

LOCK NUTS

See Nuts, Lock

LOUVERS FOR OUTDOOR AIR INTAKE OR AIR EXHAUST

Aerolite Co., The, Marietta, O.
Air Conditioning Products Co., Detroit, Mich.
Airtron Corp., Div. of the Higgins Metal Products Co., Swanton, O.
Arex Co., Chicago, Ill.
Burt Mfg. Co., Akron, O.
Chelsea Fan & Blower Co., Inc., Subsid. of Chelsea Products, Inc., Plainfield, N.J.
Construction Specialties, Inc., Cranford, N.J.
Erdle Perforating Co., Rochester, N.Y.
Imperial Damper Co., New York, N.Y.
Kirk & Blum Mfg. Co., Cincinnati, O
Leslie Welding Co., Inc., Franklin Park, Ill.
Standard Stamping & Perforating Co., Chicago, Ill.
Swartwout Fabricators, Inc., Kokomo, Ind.
Titus Mfg. Corp., Waterloo, Ia.
Union Damper Co., The, Union, Ill.
Uno Ventilator Co., Malden, Mass.
Van Noorden Co., E., Boston, Mass.
Whirlwind Mfg. Co., Houston, Tex.

LOUVERS AND SHUTTERS, AUTOMATICALLY OR MANUALLY CONTROLLED

Acme Engineering & Mfg. Corp., Muskogee, Okla.
Aerovent Fan Co., Inc., Piqua, O.
Air Conditioning Engineering Co., Cambridge, Mass.
Air Conditioning Products Co., Detroit, Mich.
Air Flow Controls Co., Minneapolis, Minn.
Airjet Ventilator Co., San Clemente, Calif.
Airmaster Corp., Chicago, Ill.
Airolite Co., Marietta, O.
Air & Refrigeration Corp., New York, N. Y.
Airtron Corp., Div. of the Higgins Metal Products Co., Swanton, O.
Allen Cooler & Ventilator, Inc., Rochester, Mich.
American Coolair Corp., Jacksonville, Fla.
American Foundry & Furnace Co., Bloomington, Ill.
American Metal Works, Inc., New Orleans, La.
American Steel Band Co., Pittsburgh, Pa.
American Warming & Ventilating Co., Toledo, O.
Ammerman Co., Inc., Stillwater, Minn.
Arex Co., Chicago, Ill.
Atcor, Inc., Warren, Mich.
Barber-Colman Co., Rockford, Ill.
Bar-Brook Mfg. Co., Inc., Shreveport, La.
Belco Industries, Inc., St. Louis, Mo.
Biersach & Niedermeyer Co., Milwaukee, Wis.
Brisk Metal Products, Ridgefield, N. J.
Bowman Steel Corp., Pittsburgh, Pa.
Buensod-Stacey Corp., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Burt Mfg. Co., Akron, O.
Carnes Corp., Verona, Wis.
Cain Mfg. Inc., Birmingham, Ala.
Champion Blower & Forge Co., Lancaster, Pa.
Chelsea Fan & Blower Co., Inc., Subsid. of Chelsea Products, Inc., Plainfield, N.J.
Cincinnati Fan & Ventilating Co., Cincinnati.
Colt Ventilation of America, Inc., Los Angeles, Calif.
Commercialaire Corp. of America, Brooklyn, N. Y.
Construction Specialties, Inc., Cranford, N. J.
Controlair Mfg. Co., Los Angeles, Calif.
Cook Co., Loren, Berea, O.
De Bothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.
Detroit Float & Stamping Co., Detroit, Mich.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Electrovent Fan & Mfg. Co., Chicago, Ill.
Elgo Shutter & Mfg. Co., Detroit, Mich.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Frigid, Inc., Brooklyn, N. Y.
General Blower Co., Subsid. Ilg Electric Ventilating Co., Morton Grove, Ill.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
Imperial Damper Co., New York, N. Y.
Independent Register Co., Cleveland, O.
International Engineering, Inc., Dayton, O.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Lakewood Engineering & Mfg. Co., Chicago, Ill.
Maple City Furnace Co., Monmouth, Ill.
Martin Fan & Blower Co., Chicago, Ill.
Meier Electric, Indianapolis, Ind.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Muckle Mfg. Co., Owatonna, Minn.
Palmer Fan Div., Palmer Engineering Co., W. DePere, Wis.
Penn Ventilator Co., Philadelphia, Pa.
Porter Co., Inc., H. K., Peerless Electric Div., Warren, O.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Reed Unit-Fans, Inc., New Orleans, La.
Register & Grille Mfg. Co., Inc., Brooklyn.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Robertson Co., H. H., Pittsburgh, Pa.
Senrac Industries, Madison, Wis.
Standard Stamping & Perforating Co., Chicago, Ill.
Swartwout Fabricators, Inc., Kokomo, Ind.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Union Damper Co., The, Union, Ill.
United Sheet Metal Co., Inc., Columbus, O.
United States Gypsum Co., Chicago, Ill.
United States Register Co., Battle Creek, Mich.
Uno Ventilator Co., Malden, Mass.
Van Noorden Co., E., Boston, Mass.
Ventilouvre Co., Inc., The, Marietta, O.
Whirlwind Mfg. Co., Houston, Tex.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Young Regulator Co., Cleveland, O.

LOUVERS, SUN REFLECTING

Airolite Co., Marietta, O.
American Warming & Ventilating Co., Toledo, O.
Brisk Metal Products, Ridgefield, N. J.
Construction Specialties, Inc., Cranford, N. J.
Kewaneer Co., Niles, Mich.
Knapp Bros. Mfg. Co., Cincinnati, O.
Lemlar Mfg. Co., Gardena, Calif.
Midget Louver Co., Norwalk, Conn.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Van Noorden Co., E., Boston, Mass.

LOW WATER CUT-OFFS

See Cut-offs, Low Water, Heating Boiler

LUBRICANTS, VALVE STEM

Almasol Corp., The, A Div. of Lubrication Engineers, Inc., Ft. Worth, Tex.
Armite Laboratories, Los Angeles, Calif.
Dixon Crucible Co., Joseph, Jersey City, N. J.
Electrofilm, Inc., N. Hollywood, Calif.
Fairchild Camera & Instrument Corp. of Syosset, Long Island, N. Y.
Gulf Oil Corp., Houston, Tex.
Imperial Oil & Grease Co., Inc., Los Angeles, Calif.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

MACHINES, BALANCING

See Equipment, Balancing

MACHINES, BLUE PRINT AND WHITE PRINT

For Reproducing Engineering Drawings

American Photocopy Equipment Co., Chicago, Ill. (for photocopy work)
Bruning Co., Inc., Charles, Mt. Prospect, Ill.
Dietzgen Co., Eugene, Chicago, Ill.
Ozalid Div. of General Aniline & Film Corp., Johnson City, N. Y.
Paragon-Revolute Div. of Charles Bruning Co., Inc., Rochester, N. Y.
Pease Co., C. F., The, Chicago, Ill.
Reproduction Engineering Corp., Essex, Conn.

MACHINES, ENGRAVING, FOR IDENTIFICATION OF PIPING EQUIPMENT

Acromark Co., Elizabeth, N. J.
Lake Chemical Co., Chicago, Ill.
New Hermes Engraving Machine Corp., New York, N. Y.
Preis Engraving Machine Co., H. P., Hillside, N. J.

MACHINES AND FILM, X-RAY

Balteau Electric Corp., Stamford, Conn.
du Pont de Nemours & Co., E. I., Photo Products Dept., Wilmington, Del. (film only)
General Electric Co., X-Ray Dept., Milwaukee, Wis.
Haloid Zero, Inc., Rochester, N.Y.
Keleket X-Ray Corp., Waltham, Mass.
Mitchell Radiation Products Corp., Norristown, Pa.

Philips Electronics, Inc., Mt. Vernon, N. Y.
Picker X-Ray Co., White Plains, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.

MACHINES, FLARING, PIPE AND TUBE

Chicago Pneumatic Tool Co., New York.
Driam Corp., The, Manitowac, Wis.
Hill, Inc., Walter P., Detroit, Mich.
Leonard Precision Products Co., Santa Ana, Calif.
Olsen Mfg. Co., Royal Oak, Mich.
Parker Fittings & Hose Div., Parker-Hannifin Corp., Cleveland, O.
Wilson Co., K. R., Arcade, N. Y.

MACHINES, PIPE CLEANING

Continental Machine Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hydraulic Mfg. Co., Bridgeport, Conn.
Narda Ultrasonics Corp., Westbury, Long Island, N. Y. (ultrasonic)
Oster Mfg. Co., The, Wickliffe, O.
Plicoflex Inc., Los Angeles, Calif.
Spartan Tool Div., H. D. Conkey & Co., Chicago, Ill.
Wilson, Inc., Thomas C., Long Island City.

MACHINES, PIPE CUTTING AND THREADING, PORTABLE

Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O.
Collins Machinery Corp., Monterey Park, Calif.
Continental Machine Co., Chicago, Ill.
Fen-Thread-Machine Co., Inc., The, Philadelphia, Pa. (for plastic and metal pipe)
H & M Pipe Beveling Machine Co., Tulsa, Okla.
Kalamazoo Tank & Silo Co., Machine Tool Div., Kalamazoo, Mich.
Landis Machine Co., Inc., Waynesboro, Pa.
Mine Safety Appliances Co., Velocity Power Tool Dept., Pittsburgh, Pa.
Muncie Gear Wks., Inc., Muncie, Ind.
Obear & Sons, Inc., Inglewood, Calif.
Oster Mfg. Co., Wickliffe, O.
Pilot Mfg. Co., Torrance, Calif.
Ridge Tool Co., Elyria, O.
Skil Corp., Chicago, Ill.
Thread-Ezy Mfg. Co., Corunna, Mich.
Toledo Pipe Threading Machine Co., Toledo, O.
Wachs Co., E. H., The, Chicago, Ill.

MACHINES, PIPE CUTTING AND THREADING, STATIONARY

Beaver Pipe Tools, Inc., Warren, O.
Bignall & Keeler Div., John Ramming Machine Co., St. Louis, Mo.
Collins Machinery Corp., Monterey Park, Calif.
Continental Machine Co., Chicago, Ill.
Krieg, Inc., Victor J., New York, N. Y.
Landis Machine Co., Inc., Waynesboro, Pa.
Obear & Sons, Inc., Inglewood, Calif.
Oster Mfg. Co., Wickliffe, O.
Pilot Mfg. Co., Torrance, Calif.
Ridge Tool Co., Elyria, O.
Saunders Mfg. Co., Yonkers, N. Y.
Toledo Pipe Threading Machine Co., Toledo, O.

MACHINES, PIPE, FOR WELDING, CUTTING, AND FITTING

Allied Weld-Craft, Inc., Indianapolis, Ind.
Beaver Pipe Tools, Inc., Warren, O.
H & M Pipe Beveling Machine Co., Tulsa, Okla.
Peck & Co., Cecil C., Cleveland, O.
Porter Co., R. C., Cincinati, O.
Vernon Tool Co., Ltd., Alhambra, Calif.
Wachs Co., E. H., The, Chicago, Ill.

MACHINES, REFRIGERATION, ABSORPTION

Arkla Air Conditioning Corp., Little Rock, Ark.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
York Div., Borg-Warner Corp., York, Pa.

MACHINES, SHEET METAL (10 gage or lighter), PITTSBURGH LOCK FORMING

Bell Machine Specialties, Trevose, Pa.
Birks Mfg. Co., Meridan, Conn. (Pittsburgh lock seam opener)
Lockformer Co., Chicago, Ill.
Maplewood Div., Rockford Machine Tool Co., Rockford, Ill.
Millers Falls Co., Greenfield, Mass.
Milton Equipment Co., Philadelphia, Pa. (sheet metal working machine)
Milwaukee Electric Tool Corp., Milwaukee, Wis.
Speed-Seam Co., Chicago, Ill.

MACHINES, SHEET METAL (10 gage or lighter), SEAMING, POWER

Acme Steel Co., Chicago, Ill.
Niagara Machine & Tool Works, Buffalo, N.Y.
Spiro U.S.A., Inc., Chicago, Ill.

MACHINES, SHEET METAL (10 gage or lighter), SLIP ROLL FORMING

Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Bertsch & Co., Inc., Cambridge City, Ind.
Hendley & Whittmore Co., Beloit, Wis.
Homestrand Machine Tool Corp., Greenwich, Conn.
Maplewood Div., Rockford Machine Tool Co., Rockford, Ill.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
San Angelo Foundry & Machine Co., San Angelo, Tex.
Webb Corp., The, Webb City, Mo.
Wysong & Miles, Inc., Greensboro, N. C.

MACHINES, TESTING, WELD

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Dillon & Co., Inc., W. C., Van Nuys, Calif.
Olsen Testing Machine Co., Tinius, Willow Grove, Pa.

MACHINES, TRENCHING, FOR PIPE LINES

Auburn Machine Works, Inc., Auburn, Nebr.
Clipper Mfg. Co., Kansas City, Mo.
Davis Mfg. Inc., Wichita, Kans. (portable)
Eveready Briksaw Co., Kansas City, Mo.
Parsons Co., Div. of Koehring Co., Newton, Ia.

MACHINES, TUBE FINNING

United Machinery Sales Co., Chicago, Ill.

MAGNESIUM ALLOY SHEETS

See Sheets, Magnesium Alloy

MAGNESIUM TUBING

See Tubing, Magnesium

MAKEUP AIR UNITS

See Units, Makeup Air, Heating and Ventilating, Horizontal Package Type, Direct Fired, Oil, and Gas; Units, Makeup Air, Heating and Ventilating, Package Type, Steam or Hot Water

MALLEABLE UNIONS

See Unions, Malleable

MANIFOLDS AND HEADERS, PREFABRICATED, FOR HEATING SYSTEMS

Acheson Mfg. Co., Rankin, Pa.
Atlantic Pipe Bending & Fabricating Corp., Moonachie, N. J.
Crane Co., Chicago, Ill.
Elkhart Products Corp., Elkhart, Ind.
Kenmore Machine Products, Inc., Lyons, N. Y.
Midwest Piping Co., Inc., St. Louis, Mo.
Milwaukee Valve Co., Milwaukee, Wis.
Ohio Brass Co., Mansfield, O.
Panel Heat, Inc., Copiague, N. Y.
Piper Industries, Inc., Roseville, Mich.
Shaw-Kendall Engineering Co., Toledo, O.
Super Radiator Corp., Minneapolis, Minn.
Thrush & Co., H. A., Peru, Ind.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.

MANIFOLDS, REFRIGERATION

Elkhart Products Corp., Elkhart, Ind.
Frick Co., Waynesboro, Pa.
Imperial-Eastman Corp., Chicago, Ill.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Mueller Brass Co., Port Huron, Mich.
Reco Products Div., Recony Corp., New York.
Refrigeration Research, Inc., Brighton, Mich.
Super Radiator Corp., Minneapolis, Minn.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Vilter Mfg. Co., Milwaukee, Wis.
York Div., Borg-Warner Corp., York, Pa.

MANOMETERS

Airserco Mfg. Co., Pittsburgh, Pa.
American Meter Co., Inc., Philadelphia, Pa.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Defender Instrument and Regulator Co., Boody, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Dynametrics Corp., Burlington, Mass.
Eclipse Fuel Engineering Co., Rockford, Ill.
Elgin Softener Corp., Elgin, Ill.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Flow Corp., Arlington, Mass. (micro)
Hastings-Raydist, Inc., Hampton, Va.
Hill & Co., E. Vernon, Lake Geneva, Wis.
King Engineering Corp., Ann Arbor, Mich.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Instrument Laboratories, Inc., Washington, D. C.
Scientific Instrument Co., Detroit, Mich.
Simplex Valve & Meter Co., Lancaster, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
Uehling Instrument Co., Paterson, N. J.
Wallace & Tiernan Inc., Belleville, N. J.
Will Corp., Rochester, N. Y.

MARKERS, PIPE, HOLE AND SADDLE

Acromark Co., Elizabeth, N. J.
Brady Co., W. H., Milwaukee, Wis.
Contour Marker Corp., Compton, Calif.
Jewel Mfg. Co., St. Paul, Minn.
Seton Name Plate Co., Inc., New Haven, Conn.

MASONRY ANCHORS

See Anchors, Expansion

MATERIALS HANDLING FANS

See Fans, Materials Handling; Units, Exhauster, Centrifugal Fan

MECHANICAL DRIVE TURBINES

See Turbines, Mechanical Drive

MECHANICAL SPEED CHANGERS

See Changers, Speed, Mechanical

MECHANICAL TRAPS

See Traps, Steam, Mechanical

MERCURY SWITCHES

See Switches, Mercury

METAL HOSE

See Hose, Flexible, Metal and Fittings

METAL, POROUS, FOR FILTRATION, SEPARATION, DIFFUSION AND FLOW CONTROL

Chemiquip Co., New York, N. Y.
Delco Moraine Div., General Motors Corp., Dayton, O. (porous metal)

Keystone Carbon Co., Inc., St. Marys, Pa.
Wabash Corp., Chicago, Ill.

METALLIC BELLOWS
See Bellows, Thermostatic and Metallic

METALLIC PACKING
See Packing, Metallic

METER MANIFOLD ASSEMBLIES
See Assemblies, Manifold, for Meters

METERS, AIR VELOCITY, DIRECT READING
Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.
Anemostat Corp. of America, New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Flow Corp., Arlington, Mass.
Gelman Instrument Co., Chelsea, Mich.
Hastings-Raydist, Inc., Hampton, Va.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Johnson Degree Day Systems, Kalamazoo, Mich.
United Electric Controls Corp., Watertown, Mass.

METERS, BTU, FOR MEASURING FLOW AND TEMPERATURE AND CALIBRATED IN BTU OR THERMS
Air-Conditioning Equipment Corp., New York, N. Y.
American Meter Co., Inc., Philadelphia, Pa.
Bailey Meter Co., Cleveland, O.
Beckman & Whitley, Inc., San Carlos, Calif.
Bristol Co., The, Waterbury, Conn.
Cutler-Hammer, Inc., Milwaukee, Wis.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Liaison Engineering Services, Garland, Tex.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.

METERS, CONDENSATE
Central Station Steam Co., Detroit, Mich.
Gamon Meter Div., Worthington Corp., Newark, N. J.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Henszey Co., Watertown, Wis.
L. R. P., Inc., Leicester, N. Y.
McIntosh Equipment Corp., New York, N. Y.
Neptune Meter Co., New York, N. Y.
Rotron Controls Corp., Woodstock, N. Y.

METERS, FLOW, GAS OR AIR
Air Conditioning Equipment Corp., New York, N. Y.
Air Products, Inc., Allentown, Pa.
American Meter Co., Inc., Philadelphia, Pa.
Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Brooks Instrument Co., Inc., Hatfield, Pa.
Dahl Co., Inc., G. W., Bristol, R. I.
Defender Instrument & Regulator Co., Boody, Ill
Dietz Co., Inc., Henry G., Long Island City, N. Y.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Eclipse Fuel Engineering Co., Rockford, Ill.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Flow Corp., Arlington, Mass.
Foster Engineering Div., General Controls Co., Warwick R. I.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hastings-Raydist, Inc., Hampton, Va.
Hays Corp., Michigan City, Ind.
Herman, Shepard, Newton Upper Falls, Mass.
King Engineering Corp., Ann Arbor, Mich.
Librascope, Inc., Commercial Div., Burbank, Calif.
McIntosh Equipment Corp., New York, N. Y.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Instrument Laboratories, Inc., Washington, D. C.
Neptune Meter Co., New York, N. Y.
Oxygen Equipment & Service Co., Chicago, Ill. (oxygen)
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Rotron Controls Corp., Woodstock, N. Y.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Selas Corp. of America, Dresher, Pa.
Simplex Valve & Meter Co., Lancaster, Pa.
Sostman & Co., H. E., Cranford, N. J.
Taylor Instrument Companies, Rochester, N. Y.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
Uehling Instrument Co., Paterson, N. J.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif
Wallace & Tiernan, Inc., Belleville, N. J.

METERS, FLOW, REFRIGERANT
Airserco Mfg. Co., Pittsburgh, Pa.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bristol Co., The, Waterbury, Conn.
Brooks Instrument Co., Inc., Hatfield, Pa.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Henry Valve Co., Melrose Park, Ill.
McIntosh Equipment Corp., New York, N. Y.
Neptune Meter Co., New York, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Rotron Controls Corp., Woodstock, N. Y.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Trimount Instrument Div., General Controls Co., Skokie, Ill.

METERS, FLOW, STEAM
American Meter Co., Inc., Philadelphia, Pa.
Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bristol Co., The, Waterbury, Conn.
Brooks Instrument Co., Inc., Hatfield, Pa.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Henszey Co., Watertown, Wis.
King Engineering Corp., Ann Arbor, Mich.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McIntosh Equipment Corp., New York, N. Y.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Instrument Laboratories, Inc., Washington, D. C.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Rotron Controls Corp., Woodstock, N. Y.
Sostman & Co., H. E., Cranford, N. J.
Taylor Instrument Companies, Rochester, N Y
Trimount Instrument Div., General Controls Co., Skokie, Ill.

METERS, PROCESS LIQUID
Air Conditioning Equipment Corp., New York, N. Y.
American Meter Co., Inc., Philadelphia, Pa.
Auto-Control Laboratories, Inc., Los Angeles, Calif.
Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bristol Co., The, Waterbury, Conn.
Brooks Instrument Co., Inc., Hatfield, Pa.
Buffalo Meter Co., Inc., Buffalo, N. Y.
Drage Products, Inc., Union City, N. J.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Gamon Meter Div., Worthington Corp., Newark, N. J.
Granberg Corp., Subsid. of American Meter Co., Inc., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Henszey Co., Watertown, Wis.
Hetherington & Berner, Inc., Indianapolis, Ind. (jacketed)
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McIntosh Equipment Corp., New York, N. Y.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Narda Ultrasonics Corp., Westbury, L.I., N. Y. (ultrasonic)
Neptune Meter Co., New York, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Rotron Controls Corp., Woodstock, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Simplex Valve & Meter Co., Lancaster, Pa.
Smith Corp., A. O., Milwaukee, Wis.
Sostman & Co., H. E., Cranford, N. J.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
Wallace & Tiernan, Inc., Belleville, N. J.

METERS, VOLUME, AIR AND GAS
Airserco Mfg. Co., Pittsburgh, Pa.
American Meter Co., Inc., Philadelphia, Pa.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bristol Co., The, Waterbury, Conn.
Brooks Instrument Co., Inc., Hatfield, Pa.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa
Hastings-Raydist, Inc., Hampton, Va.
Meriam Instrument Co., The, Cleveland, O.
Neptune Meter Co., New York, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Rotron Controls Corp., Woodstock, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Selas Corp. of America, Dresher, Pa.
Simplex Valve & Meter Co., Lancaster, Pa.
Uehling Instrument Co., Paterson, N. J.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.

METERS, WATER
Air Conditioning Equipment Corp., New York, N. Y.
American Meter Co., Inc., Philadelphia, Pa.
American Moistening Co., Cleveland, N. C.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Brooks Instrument Co., Inc., Hatfield, Pa.
Buffalo Meter Co., Inc., Buffalo, N. Y.
Fischer & Porter Co., Warminster, Pa.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Gamon Meter Div., Worthington Corp., Newark, N. J.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.

Henszey Co., Watertown, Wis.
Hersey-Sparling Meter Co., Dedham, Mass.
McIntosh Equipment Corp., New York, N. Y.
Neptune Meter Co., New York, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Rotron Controls Corp., Woodstock, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Worthington Corp., Harrison, N. J.

MIST COLLECTORS
See Collectors, Mist

MIXING VALVES
See Valves, Mixing, Steam and Water

MODULATING VALVES
See Valves, Radiator, Steam, and Hot Water Modulating

MOTOR BASES
See Bases, Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type; Bases, Motor Tension Adjusting

MOTOR CONTROLLERS
See Controllers and Starters, Motor

MOTOR OPERATED VALVES
See Valves, Motor Operated

MOTOR-PUMP UNITS
See Pump-Motor Units, Self-Contained

MOTOR STARTERS
See Controllers and Starters, Motor

MOTORS, COMPRESSED AIR POWERED
Airetool Mfg. Co., Springfield, O.
Binks Mfg. Co., Chicago, Ill.
Chicago Pneumatic Tool Co., New York, N. Y.
DeVilbiss Co., The, Toledo, O.
Gardner-Denver Co., Quincy, Ill.
Ingersoll-Rand Co., New York, N. Y.
Joy Mfg. Co., Pittsburgh, Pa.
Leiman Bros., Inc., Newark, N. J.
Thor Power Tool Co., Aurora, Ill.

MOTORS, ELECTRIC, FRACTIONAL HP
ACEC Electric Corp., New York, N. Y.
Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Airserco Mfg. Co., Pittsburgh, Pa.
Alliance Mfg. Co., Inc., Alliance, O. (Shaded pole)
Allis Co., Louis, The, Milwaukee, Wis.
Baldor Electric Co., St. Louis, Mo.
Barber-Colman Co., Rockford, Ill.
Bell & Gossett Co., Morton Grove, Ill.
Bluffton Electric Co., Bluffton, Ind.
Bodine Electric Co., Chicago, Ill.
Brown-Brockmeyer Co., Inc., Dayton, O.
Century Electric Co., St. Louis, Mo.
Chicago Pneumatic Tool Co., New York, N. Y.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Dayton Electric Mfg. Co., Chicago, Ill.
Delco Products Div., General Motors Corp., Dayton, O.
Doerr Electric Corp., Cedarburg, Wis.
Electric Autolite Co., Toledo, O.
Electric Motors & Specialties, Inc., Garrett, Ind.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Fairbanks, Morse & Co., Chicago, Ill.
Fasco Industries, Inc., Rochester, N. Y.
Franklin Electric Co., Inc., Bluffton, Ind.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hansen Mfg. Co., Inc., Princeton, Ind.
Haydon Co., A. W., The, Waterbury, Conn.
Holtzer-Cabot Electric Motor Div., National Pneumatic Co., Inc., Boston, Mass.
Howard Industries, Inc., Racine, Wis. (all types)
Howell Electric Motors Co., Detroit, Mich.
IMC Magnetics Corp., Westbury, Long Island, N. Y.
Jack & Heintz, Inc., Cleveland, O.
Kingston-Conley, Inc., Div. of the Howell Electric Motors Co., Plainfield, N. J.
Leece-Neville Co., The, Gainesville, Ga.
Leland Ohio Electric Co., The, A Subsid. of Howell Electric Motors Co., Dayton, O.
Lima Electric Motor Co., Inc., The, Lima, O.
Mamco Corp., Racine, Wis.
Marathon Electric Mfg. Corp., Wausau, Wis.
Marble Electric Corp., Gladstone, Mich.
Maico Electric Mfg. Corp., Womelsdorf, Pa.
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Morrill Motors, Ft. Wayne, Ind.
National Pneumatic Co., Inc., New York, N. Y.
Newman Electric Motors, Inc., Newark, N. J.
Ohio Electric Mfg. Co., Maple Heights, O.
Portable Electric Tools, Inc., Geneva, Ill.
Porter Co., Inc., H. K., Peerless Electric Div., Warren, O.
Redmond Co., Inc., Owosso, Mich.
Reliance Electric & Engineering Co., Cleveland, O.
Reynolds Electric Co., River Grove, Ill.
Robbins & Myers, Inc., Springfield, O.
Small Motors, Inc., Chicago, Ill.
Smith Corp., A. O., Milwaukee, Wis.
Smith Corp., A. O., Electric Motor Div., Tipp City, O.
Speedway Mfg. Co., Div. of Thor Power Tool Co., La Grange Park, Ill.
Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.
Telechron Timers and Motors, Clock & Timer Dept., General Electric Co., Ashland, Mass.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles.
U. S. Electrical Motors, Inc., Los Angeles, Calif.
Universal Electric Co., Owosso, Mich.
Wagner Electric Corp., St. Louis, Mo.
Westinghouse Electric Corp., Pittsburgh, Pa.

MOTORS, ELECTRIC, 1 HP AND OVER
ACEC Electric Corp., New York, N. Y.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Allis Co., Louis, The, Milwaukee, Wis.
Baldor Electric Co., St. Louis, Mo.
Bell & Gossett Co., Morton Grove, Ill.
Brook Motor Corp., Chicago, Ill.
Brown-Brockmeyer Co., Inc., Dayton, O.
Byron Jackson Pumps, Inc.., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif. (submersible)
Century Electric Co., St. Louis, Mo.
Continental Electric Co., Inc., Newark, N. J.
Dayton Electric Mfg. Co., Chicago, Ill.
Delco Products Div., General Motors Corp., Dayton, O.
Doerr Electric Corp., Cedarburg, Wis.
Electric Machinery Mfg. Co., Minneapolis, Minn. (100 hp and over)
Electric Products Co., Cleveland, O.
Electro-Dynamic Div., General Dynamics Corp., Bayonne, N. J.
Elliott Co., Jeannette, Pa.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Fairbanks, Morse & Co., Chicago, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hertner Electric Co., The, Cleveland, O.
Howell Electric Motors Co., Detroit, Mich.
Ideal Electric & Mfg. Co., Mansfield, O.
Imperial Electric Co., Akron, O.
Jack & Heintz, Inc., Cleveland, O.
Kingston-Conley, Inc., Div. of the Howell Electric Motors Co., Plainfield, N. J.
Kurz & Root Co., Appleton, Wis.
Leland Ohio Electric Co., The, A Subsid. of Howell Electric Motors Co., Dayton, O.
Lima Electric Motor Co., Inc., The, Lima, O.
Lincoln Electric Co., Cleveland, O.
Marathon Electric Mfg. Corp., Wausau, Wis.
Marble Electric Corp., Gladstone, Mich.
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Moore Co., The, Marceline, Mo. (Slow speed fan motors)
Newman Electric Motors, Inc., Newark, N. J.
Porter Co., Inc., H. K., Peerless Electric Div., Warren, O.
Reliance Electric & Engineering Co., Cleveland, O.
Reuland Electric Co., Alhambra, Calif.
Robbins & Myers, Inc., Springfield, O.
Safety Electrical Equipment Corp., New Haven, Conn.
Smith Corp., A. O., Milwaukee, Wis.
Smith Corp., A. O., Electric Motor Div., Tipp City, O.
Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.
U. S. Electrical Motors, Inc., Los Angeles.
Wagner Electric Corp., St. Louis, Mo.
Westinghouse Electric Corp., Pittsburgh, Pa.

MOUNTINGS, VIBRATION
See Bases, Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type

MUFFLERS, HOT GAS, FOR REFRIGERANT LINES
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Dunham-Bush, Inc., West Hartford, Conn.
Industrial Acoustics Co., Inc., New York, N. Y.
McIntire Co., The, Livingston, N. J.
Refrigeration Research, Inc., Brighton, Mich.
Taylor Forge & Pipe Works, Chicago, Ill.
Temprite Products Corp., Birmingham, Mich.
Tube Manifold Corp., North Tonawanda, N. Y.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

MUSHROOM HEATERS
See Heaters, Steam Jet, for Liquids

MUSHROOM VENTILATORS
See Ventilators, Mushroom

NAMEPLATES, STOCK WORDING FOR IDENTIFYING HEATING, PIPING AND AIR CONDITIONING EQUIPMENT AND CONTROLS
Acromark Co., Elizabeth, N. J.
Anodyne, Inc., Div. North Shore Nameplate, N. Miami Beach, Fla.
Atlantic Engravers, Wilmington, Vt.
Brady Co., W. H., Milwaukee, Wis. (self-bonding)
Gray Pantograph Engraving Co., Hoboken, N. J.
Lundell & Co., Mt. Prospect, Ill.
Metalcraft, Inc., Mason City, Ia.
Meyercord Co., The, Chicago, Ill.
New Hermes Engraving Machine Corp., New York, N. Y. (machine for marking plastic legend plates)
Pee Cee Tape & Label Co., Los Angeles, Calif.
Seton Name Plate Co., Inc., New Haven, Conn.
Southern Name Plate Shop, New Orleans, La.

NEUTRALIZERS, ACID
See Dehydrant and Acid Neutralizer

NEUTRALIZERS, ODOR
See Adsorbers, Odor, for Duct Systems

NICKEL AND NICKEL ALLOY PIPE AND FITTINGS
See Tubing, Nickel and Alloy; Fittings, Pipe, Nickel and Nickel Alloy; Pipe, Nickel and Nickel Alloy

NICKEL AND NICKEL ALLOY SHEETS
See Sheets, Nickel and Nickel Alloy

NIPPLES, PIPE, BRASS AND COPPER
Acheson Mfg. Co., Rankin, Pa.
Aeroquip, Inc., Van Wert, O.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Allen Mfg. Co., W. D., Bellwood, Ill.
American Sanitary Mfg. Co., Abingdon, Ill.
Anderson Brass Co., Detroit, Mich.

Anderson Metals Corp., Kansas City, Mo.
Brabant Brass Mfg. Co., Detroit, Mich.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Nipple Mfg. Co., Oak Park, Ill. (also chrome plated)
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Couplings Co., Chicago, Ill.
Crane Co., Chicago, Ill.
G & H Mfg. Co., Philadelphia, Pa.
Gilbert Brass Foundry Co., St. Louis, Mo.
Imperial-Eastman Corp., Chicago, Ill.
Keeney Mfg. Co., Newington, Conn.
Ladish Co., Cudahy, Wis.
Madden Brass Products Co., Aurora, Ill.
Mueller Brass Co., Port Huron, Mich.
New York Brass Foundry, New York, N. Y.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Pittsburgh Nipple Wks., Inc., Pittsburgh, Pa.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Sawhill Tubular Products, Inc., Sharon, Pa.
Spanco Brass Sales, Allegan, Mich.
Star Tubular Products Co., Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Union Malleable Mfg. Co., Ashland, O.
Walworth Co., New York, N. Y.
Ware Coupling & Nipple Co., Ware, Mass.
Weatherhead Co., Ft. Wayne Div., Ft. Wayne, Ind.
Wheeling Machine Products Co., Wheeling, W. Va.

NIPPLES, PIPE, FLEXIBLE

Allied Metal Hose Co., Long Island City, N. Y.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Hauck Mfg Co., Brooklyn, N. Y.
Johnson Metal Hose, Inc., Waterbury, Conn.
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co., San Francisco, Calif.
Lindy Heaters, Inc., Bronx, N. Y.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N Y
Techniflex Div., Port Jervis, N. Y.
Tube Turns Plastics, Inc., Louisville, Ky. (UPVC)
United States Rubber Co., New York, N. Y. (rubber)

NIPPLES, PIPE, IRON AND STEEL

Aeroquip, Inc., Van Wert, O.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Albert Pipe Supply Co., Inc., Brooklyn, N. Y.
Allen Mfg. Co., W. D., Bellwood, Ill.
Byers Co., A. M., Pittsburgh, Pa. (Wrought iron)
Camco Fittings, Inc., North Haven, Conn.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Chicago Nipple Mfg. Co., Oak Park, Ill.
Clow & Sons, Inc., James B., Chicago, Ill.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Columbus Mfg. & Supply Co., Columbus, O.
Crane Co., Chicago, Ill.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Ladish Co., Cudahy, Wis.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Pittsburgh Nipple Wks., Inc., Pittsburgh, Pa,
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Sawhill Tubular Products, Inc., Sharon, Pa.
Shank Co., Cyrus, Chicago, Ill.
Sheldon & Co., Inc., M.L., New York, N. Y.
Star Tubular Products Co., Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Union Malleable Mfg. Co., Ashland, O.
Victaulic Co. of America, Elizabeth, N. J.
Walworth Co., New York, N. Y.
Ware Coupling & Nipple Co., Ware, Mass.
Wheeling Machine Products Co., Wheeling, W. Va.
Williamson, Inc., T. D., Tulsa, Okla.

NIPPLES, PIPE, NICKEL AND NICKEL ALLOY

Bart Mfg. Corp., Belleville, N. J.
Camco Fittings, Inc., North Haven, Conn.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Esco Corp., Portland, Ore.
Harrison Steel Corp., Brooklyn, N. Y.
Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
Ladish Co., Cudahy, Wis.
Sheldon & Co., Inc., M.L., New York, N. Y.
Star Stainless Screw Co., Paterson, N. J.
Walworth Co., New York, N. Y.

NIPPLES, PIPE, PLASTIC

Argo Plastic Products, Cleveland, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.
Commercial Plastic Co., Chicago, Ill.
Conley Plastic Corp., Ed, Tulsa, Okla.
Fibercast Co., Sand Spring, Okla.
Goodrich Industrial Products Co., B. F., Akron, O.
Grinnell Co., Inc., Providence, R. I.
Kraloy Plastic Pipe Co., Inc., Los Angeles, Calif.
Industrial Plastic Fabricators, Norwood, Mass.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (PVC)
Luzerne Rubber Co., Trenton, N. J.
Mannesmann—Easton Plastic Products Co., Inc., Easton, Pa. (rigid unplasticized polyvinyl chloride)
Plastiline, Inc, Pompano Beach, Fla.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Santa Ana Plastics Div., Rexall Drug & Chemical Corp., Santa Ana, Calif.
Sheldon & Co., Inc., M.L., New York, N. Y.
Shurclose Seal Co., Detroit, Mich.
Sloane Mfg. Co., Sun Valley, Calif.
Star Tubular Products Co., Chicago, Ill.
Trans-Plastics Corp., Inc., Cleveland, O.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.
Tube Turns Plastics, Inc., Louisville, Ky. (UPVC)
Vanton Pump & Equipment Corp., Hillside, N. J.
Victaulic Co. of America, Elizabeth, N. J.
Wheeling Machine Products Co., Wheeling, W. Va.

NIPPLES, RADIATOR, SLIP AND SCREW

Crane Co., Chicago, Ill.
Fanner Mfg. Co., The, Cleveland, O.

NOISE CONTROL IN DUCTS

See Absorbers, Sound, Duct Section, Prefabricated for Noise Control In Duct Systems; Insulation, Duct, Sound Deadening

NOISE ELIMINATION FOR COOLING TOWERS

Hansson, Inc., Elof, Acoustical Div., New York, N. Y.
Industrial Acoustics Co., Inc., New York, N. Y.
Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Div., Baltimore, Md.
Korfund Co., Inc., Westbury, L.I., N. Y.
Mar-Coil Heater Co., Union City, N. J.
Midwest Noise Control, Indianapolis, Ind.
Silence, Inc., Farmingdale, N. Y.
Sound Reduction Corp., East Hartford, Conn.
Vibration Mountings & Controls, Inc., Corona, N. Y.

NOISE ELIMINATORS

See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Bases, Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type; Hose, Flexible, Metal and Fittings; Insulation, Duct, Sound Deadening

NOZZLES, ATOMIZING

American Moistening Co., Cleveland, N. C.
Bahnson Co., Winston-Salem, N. C.
Benjamin Air Rifle Co., St. Louis, Mo.
Bete Fog Nozzle Inc., Greenfield, Mass.
Binks Mfg. Co., Chicago, Ill.
Boston Machine Works Co., Lynn, Mass.
Century Engineering Corp., Cedar Rapids, Ia.
Delavan Mfg. Co., West Des Moines, Ia.
Eddington Metal Specialty Co., Eddington, Pa.
Engineer Co., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
National Airoil Burner Co., Inc., Philadelphia.
Parks Cramer Co., Fitchburg, Mass. (Industrial humidifier)
R. I. Humidifier & Ventilating Co., Inc., Cambridge, Mass.
Ross Sprinkler Co., Rosemead, Calif.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Spray Engineering Co., Burlington, Mass.
Spraying Systems Co., Bellwood, Ill.
Steinen Mfg. Co., Wm., Newark, N. J.
Supreme Electric Products Corp., Rochester, N. Y.
Water Cooling Corp., New York, N. Y.

NOZZLES, FLOODING

American Moistening Co., Cleveland, N. C.
Bahnson Co., Winston-Salem. N. C.
Bete Fog Nozzle Inc., Greenfield, Mass.
Binks Mfg. Co., Chicago, Ill.
Delavan Mfg. Co., West Des Moines, Ia.
Spraying Systems Co., Bellwood, Ill.
Steinen Mfg. Co., William, Newark, N. J.
Water Cooling Corp., New York, N. Y.

NOZZLES, FLOW MEASURING

Able Metal Spinning & Stamping Co., Far Rockaway, N. Y.
Bailey Meter Co., Cleveland, O.
B-I-F Industries, Builders-Providence Div., Providence, R. I. (open flow, insert)
Delavan Mfg. Co., West Des Moines, Ia.
Fischer & Porter Co., Warminster, Pa.
Foster Engineering Div., General Controls Co., Warwick, R.I.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Rotherm Engineering Co., Inc., Chicago, Ill.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Stokes Molded Products, Div. of Electric Storage Battery Co., Trenton, N. J. (custom molded)

NOZZLES, OIL BURNER

Benjamin Air Rifle Co., St. Louis, Mo.
Boston Machine Works Co., Lynn, Mass.
Century Engineering Corp., Cedar Rapids, Ia.
Delavan Mfg. Co., West Des Moines, Ia.
Eddington Metal Specialty Co., Eddington, Pa.
Engineer Co., New York, N. Y.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Steinen Mfg. Co., Wm., Newark, N. J.
Todd Shipyards Corp., Products Div., Brooklyn, N. Y.

NOZZLES, SPARGER, FOR TANK HEATING

Heil Process Equipment Corp., Cleveland, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.

NOZZLES, SPRAY

Allen Mfg. Co., W. D., Bellwood, Ill.
American Cooling Tower Co., Kansas City, Mo.
American Moistening Co., Cleveland, N. C.
April Showers Div., Swartwout Fabricators, Inc., Kokomo, Ind.
Austin Mfg. Corp., Austin, Tex.
Bahnson Co., Winston-Salem, N. C.
Benjamin Air Rifle Co., St. Louis, Mo.
Bete Fog Nozzle Inc., Greenfield, Mass.

Binks Mfg. Co., Chicago, Ill.
Black Mfg. Co., The, Div. of Alexander Milburn, Inc., Baltimore, Md.
Buensod-Stacey Corp., New York, N. Y.
Buffalo Forge Co. Buffalo, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chain Belt Co., Milwaukee, Wis.
Delavan Mfg. Co., West Des Moines, Ia.
DeVilbiss Co., The, Toledo, O.
Eddington Metal Specialty Co., Eddington, Pa.
Fluor Products Co., Santa Rosa, Calif.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (ceramic and plastic)
Gray Co., Inc., Minneapolis, Minn.
Grinnell Co., Inc., Providence, R. I. (for fire protection)
HERRmidifier Co., Lancaster, Pa.
Link Belt Co., Chicago, Ill.
Maid-O'-Mist, Inc., Chicago, Ill. (air operated)
Monarch Mfg. Wks., Inc., Philadelphia, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
Parks-Cramer Co., Fitchburg, Mass.
Plant Engineering & Equipment Co., Elizabeth, N. J.
Plummer Spray Equipment Co., Napoleon, O.
Raisler Corp., Grimes Sprinkler Div., New York, N. Y.
Rega Mfg. Co., Rochester, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.
Ross Sprinkler Co., Rosemead, Calif.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Skinner Irrigation Co., Troy, O.
Spray Engineering Co., Burlington, Mass.
Spraying Systems Co., Bellwood, Ill.
Stearns Co., N. C., Shreveport, La.
Steinen Mfg. Co., Wm., Newark, N. J.
Stokes Molded Products, Div. of Electric Storage Battery Co., Trenton, N. J. (custom molded)
Supreme Electric Products Corp., Rochester, N. Y.
TOT Towers Co., Houston, Tex.
Water Cooling Corp., New York, N. Y.
Water Cooling Equipment Co., St. Louis, Mo.
Worthington Corp., Harrison, N. J.
Yarnall-Waring Co., Philadelphia, Pa.

NUTS AND WASHERS, LOCK

Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Anti-Corrosive Metal Products Co., Inc., Castleton-On-Hudson, N. Y.
Chase Brass & Copper Co., Waterbury, Conn.
Clark Bros. Bolt Co., Milldale, Conn.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
Grip Nut Co., South Whitley, Ind.
Harper Co., H. M., Morton Grove, Ill.
Industrial Screw Co., Chicago, Ill.
Lamson & Sessions Co., Cleveland, O.
MacLean-Fogg Lock Nut Co., Chicago, Ill.
Moore Inc., Goodloe E., Danville, Ill.
Ohio Nut & Bolt Co., Berea, O.
Pheoll Mfg. Co., Inc., Chicago, Ill.
Republic Steel Corp., Cleveland, O.
Rockford Screw Products Co., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
SKF Industries, Inc., Philadelphia, Pa.
Shakeproof Div., Illinois Tool Wks., Elgin, Ill.
Standard Pressed Steel Co., Jenkintown, Pa.
Star Stainless Screw Co., Paterson, N. J.
Stockham Valves & Fittings, Birmingham, Ala.
Tinnerman Corp., George A., Cleveland, O.
Walworth Co., New York, N. Y.

OBSERVATION BOILER PORTS

See Ports, Observations, Boiler

ODOR ADSORBERS

See Filters, Air; Adsorbers, Odor, for Duct Systems

ODOR NEUTRALIZERS

See Adsorbers, Odors, for Duct Systems Compounds, Air Freshening

OIL BURNERS

See Burners, Oil

OIL COOLERS

See Coolers, Oil

OIL, CUTTING, PIPE

Armour Industrial Chemical Co., Div. of Armour & Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Beaver Pipe Tools, Inc., Warren, O.
Blue Seal Chemical Co., Roselle Park, N. J.
Chesterton Co., A. W., Everett, Mass.
Gulf Oil Corp., Houston, Tex.
Hercules Chemical Co., Inc., New York, N. Y.
Mobil Oil Co., Inc., New York, N. Y.
Nye Tool Co., Chicago, Ill.
Obear & Sons, Inc., Inglewood, Calif.
Oster Mfg. Co., Wickliffe, O.
Ridge Tool Co., Elyria, O.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Shell Oil Co., Lubricants Dept., Flushing, N. Y.
Standard Oil Co. of California, San Francisco, Calif.
Standard Oil Co. of Indiana, Chicago, Ill.
Suflo, Inc., Elizabeth, N. J.
Sun Oil Co., Philadelphia, Pa.
Texaco, Inc., New York, N. Y.
Toledo Pipe Threading Machine Co., Toledo, O.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Warren Refining & Chemical Co., The, Cleveland, O.
Whitlam Mfg. Co., J. C., Wadsworth, O.
X Laboratories, Inc., New York, N. Y.

OIL, HEAT TRANSFER

Dow Corning Corp., Midland, Mich.
Gulf Oil Corp., Houston, Tex.
Monsanto Chemical Co., St. Louis, Mo.
Mobil Oil Co., Inc., New York, N. Y.
Shell Oil Co., Lubricants Dept., Flushing, N. Y.
Standard Oil Co. of Indiana, Chicago, Ill.
Sun Oil Co., Philadelphia, Pa.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

OIL, REFRIGERATION

Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Belt-Ice Corp., Seattle, Wash.
Gulf Oil Corp., Houston, Tex.
Illinois Oil Products, Inc., Rock Island, Ill.
Mobil Oil Co., New York, N. Y.
Sealed Units Parts Co., Inc., New York, N. Y.
Shell Oil Co., Lubricants Dept., Flushing, N. Y.
Standard Oil Co. of California, San Francisco, Calif.
Standard Oil Co. of Indiana, Chicago, Ill.
Sun Oil Co., Philadelphia, Pa.
Texaco, Inc., New York, N. Y.
York Div., Borg-Warner Corp., York, Pa.

OIL SEPARATORS

See Separators, Oil

OILER UNIT, FOR USE WITH PIPE THREADER

Ridge Tool Co., The, Elyria, O.

OILERS, FOR REFRIGERATION COMPRESSORS

Noera Mfg. Co., Div. Chase Brass & Copper Co., Waterbury, Conn.
Refrigeration Devices Co., Nutley, N. J.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Swift Lubricator Co., Inc., Elmira, N. Y.
Trico Fuse Mfg. Co., Milwaukee, Wis.
York Div., Borg-Warner Corp., York, Pa.

OILS, FOR COATING VISCOUS AIR FILTERS

Air-Maze Corp., Subsid. of Rockwell-Standard Corp., Cleveland, O.
Continental Air Filters Inc., Louisville, Ky.
Esso Standard Div., Humble Oil & Refining Co., New York, N. Y.
Filt-R-Ite Co., Chicago, Ill.
Gulf Oil Co., Houston, Tex.
Research Products Corp., Madison, Wis.
Standard Oil Co. of California, San Francisco, Calif.
Trion, Inc., McKees Rocks, Pa.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Vortox Co., Claremont, Calif.

OIL HEATERS

See Heaters, Oil Tank, Suction Bell

OIL PREHEATERS

See Heaters, Oil Tank, Suction Bell; Preheaters, Fuel Oil; Units, Fuel Oil, Heating, Pumping and Straining

OPERATORS, DAMPER, DUCT

Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Arens Controls, Inc., Evanston, Ill.
Au-Temp-Co Corp., New York, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cleveland Controls, Inc., Cleveland, O.
Coen Controls Co., Inc., San Francisco, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Defender Instrument & Regulator Co., Boody, Ill.
Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hart & Cooley Mfg. Co., Holland, Mich.
Heat-Timer Corp., New York, N. Y.
Imperial Damper Co., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Kingston National Controls Div., Kingston Industries, Inc., Medfield, Mass.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
New England Gear Works, Inc., Southington, Conn.
Optimum Control Corp., Cleveland, O.
Powers Regulator Co., Skokie, Ill.
Reid Controls, Inc., Burbank, Calif.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Shallcross Controls, Inc., Markesan, Wis.
Taylor Instrument Companies, Rochester, N. Y.
Teleflex Industrial Products, Inc., Boyertown, Pa.
Wa-Trol, Houston, Tex.
Young Regulator Co., Cleveland, O.

OPERATORS, VALVE, HYDRAULIC OR ELECTRIC

Au-Temp-Co Corp., New York, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia.
Cameron Iron Works, Inc., Houston, Tex.
Carter Controls, Inc., Lansing, Ill.
Cleveland Controls, Inc., Cleveland, O.
Coen Controls Co., Inc., San Francisco, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
De Zurik Corp., Sartell, Minn.
Earle Gear & Machine Co., Philadelphia, Pa.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hanna Engineering Wks., Chicago, Ill.
Heat-Timer Corp., New York, N. Y.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hunt Valve Co., Div. of IBEC, Salem, O.
Instruments, Inc., Tulsa, Okla.
Jamesbury Corp., Worcester, Mass.
Janette Mfg. Co., Morton Grove, Ill.

Johnson Service Co., Milwaukee, Wis.
Kieley & Mueller, Inc., Middletown, N. Y.
Kingston National Controls Div., Kingston Industries, Inc., Medfield, Mass. (electric)
Ledeen Mfg. Co., El Monte, Calif.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McDonnell & Miller, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
New England Gear Works, Inc., Southington, Conn.
Optimum Control Corp., Cleveland, O.
Pacific Valves, Inc., Long Beach, Calif.
Philadelphia Gear Corp., King of Prussia, Pa.
Powers Regulator Co., Skokie, Ill.
Reid Controls, Inc., Burbank, Calif.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Sparton Corp., Jackson, Mich.
Taylor Instrument Companies, Rochester.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.

OPERATORS, VALVE, REMOTE, HAND

Babbitt Steam Specialty Co., New Bedford, Mass.
Cleveland Controls, Inc., Cleveland, O.
Conoflow Corp., Subsid. of Walworth Co., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif. and Skokie, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Instruments, Inc., Tulsa, Okla.
Jamesbury Corp., Worcester, Mass
Ladish Co., Cudahy, Wis.
New England Gear Works, Inc., Southington, Conn.
OPW-Jordan Corp., Cincinnati, O.
Pacific Valves, Inc., Long Beach, Calif.
Philadelphia Gear Corp., King of Prussia, Pa.
Reid Controls, Inc., Burbank, Calif.
Stow Mfg. Co., Binghamton, N. Y.
Teleflex Industrial Products, Inc., Boyertown, Pa.

ORIFICE FLANGES

See Flanges, Orifice

ORIFICE UNIONS

See Unions, Orifice

ORIFICES, FLOW MEASURING

American Meter Co., Inc., Philadelphia, Pa.
Bailey Meter Co., Cleveland, O.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bristol Co., The, Waterbury, Conn.
Brooks Instrument Co., Inc., Hatfield, Pa.
Ellison Draft Gage Co., Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Infilco, Inc., Tucson, Ariz.
Madden Corp., The, Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Phoenix Products Co., Milwaukee, Wis. (spun metal)
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Simplex Valve & Meter Co., Lancaster, Pa.
Stokes Molded Products, Div. of Electric Storage Battery Co., Trenton, N. J. (custom molded)
Taylor Instrument Companies, Rochester.
Trimount Instrument Div., General Controls Co., Skokie, Ill.

ORIFICES, RADIATOR

Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Clark-Cooper Co., Inc., CC Pump Div., Palmyra, N. J.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Johnson Service Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Thrush & Co., H. A., Peru, Ind.

OVERFIRE AIR JETS

See Jets, Overfire Air, for Smoke Abatement

OVERHEAD VALVE OPERATORS

See Operators, Valve, Remote, Hand

OVER-PRESSURE UNLOADERS, FOR REFRIGERANTS

Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Hubbell Corp., Mundelein, Ill.

OXY-ACETYLENE WELDING

See Welding and Cutting Apparatus, Oxy-Acetylene

OXYGEN ANALYZERS

See Analyzers, Oxygen

OXYGEN PIPING AND REGULATING SYSTEMS

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Burdette Oxygen Co. of Calif., Huntington Park, Calif.
General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Melchior, Armstrong, Dessau, Inc., Ridgefield, N. J.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Oxygen Equipment & Service Co., Chicago.
Research Vacuum Supply Co., Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh.

OZONE APPARATUS

Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

PACKAGED HEAT PUMP UNITS

See Unit, Air Conditioning, Reverse Refrigeration Cycle

PACKAGED STEAM GENERATORS

See Boilers, Packaged Units, Heating and Process

PACKING, ASBESTOS

Abbott & Biddle Co., Philadelphia, Pa.
Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Allpax Co., Inc., Mamaroneck, N. Y.
Anchor Packing Co., Philadelphia, Pa.
Belmont Packing & Rubber Co., The, Philadelphia, Pa.
Carey Mfg. Co., Philip, Cincinnati, O. (insulating panel for housing)
Chesterton Co., A. W., Everett, Mass.
Chicago Specialty Mfg. Co., Chicago, Ill.
Conneaut Plastic Metallic Packing Co., Conneaut, O.
Crane Packing Co., Morton Grove, Ill.
Darcoid Co., Inc., New York, N. Y.
Durabla Mfg. Co., New York, N. Y.
Felt Products Mfg. Co., Skokie, Ill.
Fibrous Products Div., Union Asbestos & Rubber Co., Bloomington, Ill.
Flexrock Co., Philadelphia, Pa.
Garlock, Inc., Palmyra, N. Y.
Gatke Corp., Chicago, Ill.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Grant Wilson, Inc., Chicago, Ill.
Greene, Tweed & Co., North Wales, Pa.
Houghton & Co., E. F., Philadelphia, Pa.
Johns-Manville Corp., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Linear Incorporated, Philadelphia, Pa.
New York Belting & Packing Co., Passaic, N. J.
North American Asbestos Corp., Chicago, Ill.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Porter Co., Inc., H. K., Thermoid Div., Philadelphia, Pa.
Q-P Mfg. Co., Needham Heights, Mass.
Raybestos-Manhattan, Inc., Passaic, N. J.
Rhopac, Inc., Skokie, Ill.
Sims Pump Valve Co., Hoboken, N. J.
Superior Valve & Fittings Co., Pittsburgh.
United States Rubber Co., New York, N. Y.
Zimmerman Packing, Cincinnati, O.

PACKING, FIBER

Abbott & Biddle Co., Philadelphia, Pa.
Allpax Co., Inc., Mamaroneck, N. Y.
Anchor Packing Co., Philadelphia, Pa.
Armstrong Cork Co., Lancaster, Pa.
Belmont Packing & Rubber Co., The, Philadelphia, Pa.
Chesterton Co., A. W., Everett, Mass.
Crane Packing Co., Morton Grove, Ill.
Darcoid Co., Inc., New York, N. Y.
Durabla Mfg. Co., New York, N. Y.
Flexrock Co., Philadelphia, Pa.
Garlock, Inc., Palmyra, N. Y.
Goodall Rubber Co., Trenton, N. J.
Greene, Tweed & Co., North Wales, Pa.
Hinde & Dauch Div., West Virginia Pulp & Paper Co., Sandusky, O.
Houghton & Co., E. F., Philadelphia, Pa.
Johns-Manville Corp., New York, N. Y.
Linear Incorporated, Philadelphia, Pa.
New York Belting & Packing Co., Passaic, N. J.
North American Asbestos Corp., Chicago, Ill.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Porter Co., Inc., H. K., Thermoid Div., Philadelphia, Pa.
Raybestos-Manhattan, Inc., Passaic, N. J.
Sims Pump Valve Co., Hoboken, N. J.
Superior Valve & Fittings Co., Pittsburgh.
United States Rubber Co., New York, N. Y.
Zimmerman Packing, Cincinnati, O.

PACKING, LEATHER

Anchor Packing Co., Philadelphia, Pa.
Belmont Packing & Rubber Co., The, Philadelphia, Pa.
Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Excelsior Leather Washer Mfg. Co., Rockford, Ill.
Garlock, Inc., Palmyra, N. Y.
Graton & Knight Co., Worcester, Mass.
Houghton & Co., E. F., Philadelphia, Pa.
Pacific States Felt & Mfg. Co., San Francisco, Calif.
Q-P Mfg. Co., Needham Heights, Mass.
Rhoads & Sons, J. E., Wilmington, Del.
Schieren Co., Chas. A., Camden, N. J.
Sims Pump Valve Co., Hoboken, N. J.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Williams & Son, I. B., Dover, N. H.
Zimmerman Packing, Cincinnati, O.

PACKING, METALLIC

Allpax Co., Inc., Mamaroneck, N. Y.
Anchor Packing Co., Philadelphia, Pa.
Belmont Packing & Rubber Co., The, Philadelphia, Pa.
Chesterton Co., A. W., Everett, Mass.
Conneaut Plastic Metallic Packing Co., Conneaut, O.
Crane Packing Co., Morton Grove, Ill.
Darcoid Co., Inc., New York, N. Y.
Felt Products Mfg. Co., Skokie, Ill.
Flexrock Co., Philadelphia, Pa.
Garlock, Inc., Palmyra, N. Y.
Greene, Tweed & Co., North Wales, Pa.
Johns-Manville Corp., New York, N. Y.
Johnston Foil Mfg. Co., St. Louis, Mo.
Newage Industries, Inc., Jenkintown, Pa.
New York Belting & Packing Co., Passaic, N. J.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Q-P Mfg. Co., Needham Heights, Mass.
Raybestos-Manhattan, Inc., Passaic, N. J.
Sims Pump Valve Co., Hoboken, N. J.
United States Rubber Co., New York, N. Y.
Zimmerman Packing, Cincinnati, O.

PACKING, RUBBER AND SYNTHETIC

Acme-Hamilton Mfg. Corp., Trenton, N. J.
Allpax Co., Inc., Mamaroneck, N. Y.
American Felt Co., Glenville, Conn.
Anchor Packing Co., Philadelphia, Pa.

Armstrong Cork Co., Lancaster, Pa.
Baker & Co., R. H., Los Angeles, Calif.
Belmont Packing & Rubber Co., The, Philadelphia, Pa.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Chesterton Co., A. W., Everett, Mass.
Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Chicago Specialty Mfg. Co., Chicago, Ill.
Continental Rubber Wks., Erie, Pa.
Crane Packing Co., Chicago, Ill.
Darcoid Co., Inc., New York, N. Y.
Dow Corning Corp., Midland, Mich.
Felt Products Mfg. Co., Skokie, Ill.
Flexrock Co., Philadelphia, Pa.
Garlock, Inc., Palmyra, N. Y.
Gates Rubber Co., Denver, Colo.
Goodall Rubber Co., Trenton, N. J.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Greene, Tweed & Co., North Wales, Pa.
Hewitt-Robins, Inc., Stamford, Conn.
Houghton & Co., E. F., Philadelphia, Pa.
Johns-Manville Corp., New York, N. Y.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Linear Incorporated, Philadelphia, Pa.
Mercer Rubber Co., Hamilton Sq., N. J.
Minnesota Rubber Co., Minneapolis, Minn.
Nazar Rubber Co., Toledo, O.
New York Belting & Packing Co., Passaic, N. J.
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif.
Parker Seal Co., Div. of Parker-Hannifin Corp., Cleveland, O.
Porter Co., Inc., H. K., Thermoid Div., Philadelphia, Pa.
Q-P Mfg. Co., Needham Heights, Mass.
Raybestos-Manhattan, Inc., Passaic, N. J.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.
Rhopac, Inc., Skokie, Ill.
Saran Lined Pipe Co., Ferndale, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Thermoid Co., Trenton, N. J.
United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J.
United States Rubber Co., New York, N. Y.
United States Stoneware Co., New York, N. Y.
Western Felt Works, Chicago, Ill.
Zimmerman Packing, Cincinnati, O.

PAINT, HIGH TEMPERATURE, FOR HOT SURFACES

Arco Co., The, Cleveland, O.
Babbitt Chemical Co., New Bedford, Mass.
Barreled Sunlight Paint Co., Providence, R. I. (heat resistant aluminum)
Barrett Div., Allied Chemical Corp., New York, N. Y.
Chem Industrial Co., Brooklyn, O.
Chemical Coatings & Engineering Co., Media, Pa.
Chemical Solvent Co., Birmingham, Ala.
Claronex Products, Inc., Brooklyn, N. Y. (liquid aluminum)
Continental Products Co., Euclid, O.
Corrosion Control Co., Inc., New York, N. Y.
Dampney Co., Hyde Park, Boston, Mass.
Debevoise Co., The, Brooklyn, N. Y.
Dixon Crucible Co., Joseph, Jersey City, N. J.
du Pont de Nemours & Co., E. I., Finishes Div., Wilmington, Del.
Felt Products Mfg. Co., Skokie, Ill.
Flexrock Co., Philadelphia, Pa.
Foster Co., Benjamin, Philadelphia, Pa.
Glidden Co., The, Cleveland, O.
Guard Coatings Corp., Long Island City, N. Y.
Hague & Co., Inc., Alfred, Div. of Lacquer & Chemical Corp., Brooklyn, N. Y.
Hercules Chemical Co., Inc., New York, N. Y.
Horn Companies, A. C., Subsidiary of Sun Chemical Corp., New York, N. Y.
Illinois Bronze Powder Co., Chicago, Ill.
Industrial Finishes Co., Inc., Philadelphia, Pa.
Koppers Company, Inc., Pittsburgh, Pa.
Lastik Paint, Inc., Pittsburgh, Pa.
Markal Co., Chicago, Ill. (protective coatings)
Master Mechanics Co., The, Cleveland, O.
Metal & Thermit Corp., Rahway, N. J.
Midland Industrial Div., The Harrison Paint & Varnish Co., Canton, O.
Moran Paint Co., Xenia, O.
Nebel Mfg. Co., Cleveland, O.
Peters Co., The, Div. of Toledo Paint & Chemical Co., Toledo, O.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Quigley Co., Inc., New York, N. Y.
Randolph-Page, Inc., New York, N. Y. (for radiators)
Rust-Oleum Corp., Evanston, Ill.
S.O.S. Products Co., Inc., Brooklyn, N. Y.
Sandstrom Products Co., Port Byron, Ill.
Sherwin-Williams Co., The, Cleveland, O.
Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y. (heat-resisting aluminum)
Speco, Inc., Cleveland, O.
Steelcote Mfg. Co., St. Louis, Mo.
Thompson and Co., Oakmont, Pa.
Tropical Paint Co., Cleveland, O.
Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich. (aluminum)
Valdura Div., American-Marietta Co., Chicago, Ill.
Warren Refining & Chemical Co., The, Cleveland, O.
Whitlam Mfg. Co., J. C., Wadsworth, O.
Wilbur & Williams Co., Norwood, Mass.

PANEL BOARDS

See Boards, Panel and Control

PANEL HEATING AND COOLING

See Coils and Panels, Radiant Heating and Cooling; Panels, Electric Heating

PANELS, ELECTRIC HEATING

Adam Electric Co., Frank, St. Louis, Mo.
Allied Precision Industries, Inc., Geneva, Ill.
Ampere Industries, Newark, N. J.
Arvin Industries, Inc., Columbus, Ind.
Berko Electric Mfg. Co., Jamaica, N. Y.
Can Arm Corp., Champlain, N. Y.
Cavalier Corp., Electric Heating Div., Chattanooga, Tenn.
Ceilheat, Inc., Knoxville, Tenn.
Continental Radiant Glass Heating Corp., New York, N. Y.
Corning Glass Works, Corning, N. Y.
Dixie Raydiant Electric Heat Corp., Atlanta, Ga.
Electrend Products Corp., St. Joseph, Mich.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Electro Temp Corp., The, Springfield, Mass.
Electrovector, Inc., Brooklyn, N. Y.
Ervite Corp., Erie, Pa. (porcelain enameled)
Everwarm, Inc., Knoxville, Tenn.
Heatmore, Inc., Brooklyn, N. Y.
Markel Electric Products, Inc., Buffalo, N. Y.
Matthews Electric Heater Mfg. Co., Albertville, Ala.
Modernheat Cable Corp., Kingsport, Tenn.
Radiant Electric Heat Co., Centerville, Ia.
Roberson Inc., Seattle, Wash.
Salton Mfg. Co., Inc., New York, N. Y.
Sunwarm, Inc., Kingsport, Tenn.
Tennessee Plastics, Inc., Johnson City, Tenn.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Zell-Aire Corp., Reading, Pa.

PANELS, PERFORATED, FOR AIR DIFFUSION

Diamond Mfg. Co., Wyoming, Pa.
General Air Products Corp., Cedar Grove, N. J.
Harrington & King Perforating Co., Inc., Chicago.
Mahon Co., R. C., The, Detroit, Mich.
Manhattan Perforated Metal Co., Inc., Long Island City, N. Y.
Multi-Vent Div., Pyle-National Co., The, Chicago, Ill.
Mundt & Sons, Charles, Jersey City, N. J.
Simplex Ceiling Corp., New York, N. Y.
Titus Mfg. Corp., Waterloo, Ia.
Wakefield Co., The, Vermilion, O.

PANELS, WINDOW, FOR AIR CONDITIONERS

Rusco, A Div. of the F. C. Russell Co., Pandora, O.
Southern Plastics Co., Columbia, S. C.

PARTS FOR HEATING AND AIR CONDITIONING EQUIPMENT

Adams Co., The, Dubuque, Iowa.
Air & Refrigeration Corp., New York, N. Y. (factory insulated panels)
Alter Co., Harry, Chicago, Ill.
Atlas Mfg. Co., St. Paul, Minn. (boiler jackets, furnace cabinets, air conditioning cabinets)
By-Buk Co., Los Angeles, Calif. (pressure sensitive corner pads for preventing surface scratches)
Carey Mfg. Co., Philip, Cincinnati, O.
Chicago Molded Products Corp., Chicago, Ill. (knobs and handles)
Commercial Shearing & Stamping Co., Youngstown, O.
Detroit Stamping Co., Detroit, Mich.
Duro-Dyne Corp., Farmingdale, L. I., N. Y. (hardware and parts used in fabricating dampers and turning vanes)
Eaton Mfg. Co., Foundry Div., Vassar, Mich. (gray iron castings for air conditioning equipment)
Elkhart Products Corp., Elkhart, Ind. (fabricated tubular parts)
Falstrom Co., Passaic, N. J. (Air conditioning cabinets, steel control panels)
Federal-Mogul Div., Federal-Mogul-Bower Bearings, Inc., Detroit, Mich. (bushings, sleeves, ferrules)
General Tire & Rubber Co., Logansport, Ind. (Blower mounting)
Harrison Sheet Steel Co., Chicago, Ill. (covers for radiators)
Mueller Brass Co., Port Huron, Mich. (Specially fabricated copper tubing, machine formed tubes)
National Lock Co., Inc., Rockford, Ill. (hinges, handles, latches, catches, supports, etc.)
Nylok Corp., The, Paramus, N. J. (self-locking fasteners)
Phoenix Products Co., Milwaukee, Wis. (metal spinnings for fan housings, diffusers, etc.)
Pittsfield Products, Inc., Ann Arbor, Mich. (perforated wire cloth parts)
Recc Products Div., Recony Corp., New York, N. Y.
Republic Steel Corp., Cleveland, O. (cabinets, housings, canopies)
South Chester Corp., Southco Div., Lester, Pa. (blind rivets, panel fasteners, door retaining springs)
Standard Pressed Steel Co., Jenkintown, Pa. (socket screws, spring pins)
Utica Products, Inc., Utica, N. Y.
Ventfabrics, Inc., Chicago, Ill. (damper hardware for making dampers) (latches and hardware fan access doors)

PARTS, REFRIGERATING COMPRESSORS

(Manufacturers of parts only for repairing compressors. For manufacturers of compressors — See Compressors, Refrigerating)

Alter Co., Harry, Chicago, Ill.
Hunt Spiller Mfg. Corp., Boston, Mass.
Production Stamping Co., Omaha, Nebr.
Sealed Unit Parts Co., Inc., New York, N. Y.
Shank Co., Cyrus, Chicago, Ill.

PENETRANT, DYE, FOR NON-DESTRUCTIVE TESTING OF METAL

Met-L-Chek Co., Los Angeles, Calif.
Turco Products, Inc., Wilmington, Calif.

PENETRANT SOLVENT FOR LOOSENING THREADED JOINTS

See Solvent, Penetrant

pH INDICATORS

See Indicators, pH

PILLOW BLOCK BEARINGS

See Bearings, Pillow Block

PILOT LIGHTS

See Lights, Pilot and Signal

PILOTS, GAS, FOR OIL BURNERS

Eclipse Fuel Engineering Co., Rockford, Ill.
Hauck Mfg. Co., Brooklyn, N. Y.

Leahy Mfg. Co., Los Angeles, Calif.
Midwesco, Inc., Chicago, Ill.
National Airoil Burner Co., Inc., Philadelphia, Pa.
Ransome Torch & Burner Co., Emeryville, Calif.
Rayfield-Staffco Burner Co., Chicago, Ill.
Schurs Burner & Equipment, Inc., South Gate, Calif.
Scully Signal Co., Melrose, Mass.
White-Rodgers Co., St. Louis, Mo.

PINS, FOR FLANGE LINE-UP

Align-O Pipe Guide Co., Upper Darby, Pa.
Mathey Machine Works, Inc., C. A., Tulsa, Okla.

PIPE, ALUMINUM

Aluminum Co. of America, Pittsburgh, Pa.
Anaconda Aluminum Co., Louisville, Ky.
Central Steel & Wire Co., Chicago, Ill.
Harvey Aluminum, Torrance, Calif.
Kaiser Aluminum & Chemical Sales, Inc., Oakland, Calif.
Lucey Alloy Products Corp., Chattanooga, Tenn.
Olin Mathieson Chemical Corp., Metals Div., New York, N. Y.
Revere Copper & Brass, Inc., New York, N. Y.
Reynolds Metals Co., Richmond, Va.
Roberts Co., C. A., Franklin Park, Ill.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Wolverine Tube, Div. of Calumet and Hecla, Inc., Allen Park, Mich.
Youngstown Welding & Engineering Co., Youngstown, O.

PIPE, ASBESTOS FIBER AND CEMENT

Enderle, Inc., Ltd., Frank X., Los Angeles, Calif.
Johns-Manville Corp., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.

PIPE BENDERS

See Benders, Pipe

PIPE BENDING GAGES

See Gages, Pipe Bending

PIPE BIT SETS

See sets, Pipe Bit

PIPE, BRASS AND COPPER

American Sanitary Mfg. Co., Abingdon, Ill.
Anaconda American Brass Co., Waterbury, Conn.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Gardiner Metal Co., Chicago, Ill.
Hussey & Co., C. G., Div. Copper Range Co., Pittsburgh, Pa.
Lewin-Mathes Co., Div. of Cerro de Pasco Corp., St. Louis, Mo.
Mueller Co., Decatur, Ill.
Mueller Brass Co., Port Huron, Mich.
National Copper & Smelting Co., Cleveland, O.
Phelps Dodge Copper Products Corp., New York, N. Y.
Reading Tube Corp., New York, N. Y.
Revere Copper and Brass, Inc., New York, N. Y.
Roberts Tube Div., Prestyle Mfg. Co., Detroit, Mich.
Scovill Mfg. Co., Waterbury, Conn.
Wolverine Tube, Div. of Calumet and Hecla, Inc., Allen Park, Mich.

PIPE, CAST IRON, PRESSURE, BELL AND SPIGOT

Alabama Pipe Co., Anniston, Ala.
American Cast Iron Pipe Co., Birmingham, Ala.
Central Foundry Co., New York, N. Y.
Clow & Sons, Inc., James B., Chicago, Ill.
Combustion Engineering Inc., New York.
Duriron Co., Inc., Dayton, O. (corrosion resisting)
Griffin Pipe Div., Griffin Wheel Co., Council Bluffs, Ia.
Inner-Tite Div. of Yara Engineering Corp., Elizabeth, N. J.
Lynchburg Foundry Co., Lynchburg, Va.
McWane Cast Iron Pipe Co., Birmingham, Ala.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y.
United States Pipe & Foundry Co., Birmingham, Ala.

PIPE, CAST IRON, PRESSURE FLANGED

Alabama Pipe Co., Anniston, Ala.
American Cast Iron Pipe Co., Birmingham, Ala.
Clow & Sons, Inc., James B., Chicago, Ill.
Duriron Co., Inc., Dayton, O. (corrosion resisting)
Lynchburg Foundry Co., Lynchburg, Va.
McWane Cast Iron Pipe Co., Birmingham, Ala.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y.
United States Pipe & Foundry Co., Birmingham, Ala.

PIPE, CAST IRON, THREADED

Alabama Pipe Co., Anniston, Ala.
American Cast Iron Pipe Co., Birmingham, Ala.
Clow & Sons, Inc., James B., Chicago, Ill.
United States Pipe & Foundry Co., Birmingham, Ala.

PIPE CLEANING COMPOUNDS

See Compounds, Cleaning Pipe Coil and Condenser

PIPE CLEANING MACHINES

See Machines, Pipe Cleaning; Cleaners, Pipe Line, Electrically Driven; Rams, Water, for Cleaning Out Pipe Lines

PIPE COILS

See Coils, Pipe

PIPE COUPLINGS

See Couplings, Pipe

PIPE COVERING, ADHESIVES

See Adhesives, for Pipe Covering

PIPE CUTTERS

See Cutters, Pipe

PIPE CUTTING MACHINES

See Machines, Pipe Cutting and Threading; Cleaners, Pipe Line, Electrically Driven; Rams, Water, for Cleaning Out Pipe Lines

PIPE EXTRACTORS

See Extractors, Pipe

PIPE, FIBER

Brown Co., Boston, Mass.
Central Foundry Co., New York, N. Y.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Orangeburg Mfg. Co., Orangeburg, N. Y.
Sonoco Products Co., Construction Products Div., Hartsville, S. C.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J. (bituminized)

PIPE, FINNED

Bridgeport Brass Co., Bridgeport, Conn.
Brown Fintube Co., Elyria, O.
Crane Co., Chicago, Ill.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Edwards Engineering Corp., Pompton Plains, N. J.
Frick Co., Waynesboro, Pa. (square and spiral)
Griscom-Russell Co., The, Massillon, O.
Heat Transfer Products, Inc., Perkasie, Pa.
Imeco, Inc., Chicago, Ill.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lee Vine Fin-Tube Radiator Co., Inc., New Haven, Conn.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Rome-Turney Radiator Co., Rome, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Sterling Radiator Co., Inc., Westfield, Mass.
Tenney Engineering, Inc., Union, N. J.
Vulcan Radiator Co., Hartford, Conn.

PIPE, FINNED

Also See Surface, Finned, Heating; and Surface, Finned, Cooling

PIPE AND FITTINGS, GAS VENT AND FLUE

Acme Mfg. Co., Philadelphia, Pa.
Adelta Mfg. Co., Inc., Philadelphia, Pa.
Armstrong Fittings Co., Des Moines, Ia.
Condensation Engineering Corp., Chicago, Ill.
Dura-Vent Corp., Redwood City, Calif.
Enderle, Inc., Ltd., Frank X., Los Angeles, Calif.
Excelsior Steel Furnace Co., The, Chicago, Ill.
Hart & Cooley Mfg. Co., Holland, Mich.
Harvey Aluminum, Torrance, Calif.
Inland Steel Products Co., Milwaukee, Wis.
Johns-Manville Corp., New York, N. Y.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Maurlee Co., Inc., Woodbury Heights, N. J.
Metal Fabricators, Inc., Charlotte, N. C.
Meyer & Bro. Co., F., Peoria, Ill.
Mirror Patented Stove Pipe Co., Hartford, Conn.
Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Robinson Clay Product Co., The, Akron, O.
Van-Packer Co. Div. of the Flintkote Co., Chicago Heights, Ill.
Wallace Co., William, **Metalbestos Div.**, Belmont, Calif.
Waverly Heating Supply Co., Beverly, Mass.
Williamson Co., The, Cincinnati, O.

PIPE FITTINGS

See Fittings, Pipe

PIPE, GLASS

Corning Glass Wks., Corning, N. Y.
Fischer & Porter Co., Warminster, Pa.

PIPE HANGERS

See Hangers and Supports, Pipe

PIPE, HARD RUBBER

American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Gates Engineering Co., Wilmington, Del.
General Tire & Rubber Co., Akron, O.
Hewitt-Robins, Inc., Stamford, Conn.
Luzerne Rubber Co., Trenton, N. J.
Raybestos-Manhattan, Inc., Passaic, N. J. (Flexible)
United States Rubber Co., New York, N. Y.
Vanton Pump & Equipment Corp., Hillside, N. J.

PIPE INSULATION ADHESIVES

See Adhesives, for Pipe Covering

PIPE, JACKETED

Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Durant Insulated Pipe Co., E. Palo Alto, Calif.
Heat & Power Corp., Baltimore, Md.
Hetherington & Berner, Inc., Indianapolis, Ind.
Kaiser Co., E. B., Glenview, Ill.
Midwest Piping Co., Inc., St. Louis, Mo.
Nooter Corp., St. Louis, Mo.
Parks-Cramer Co., Fitchburg, Mass.
Pittsburgh Standard Products Co., Verona, Pa.
Red Jacket, Inc., Carnegie, Pa.
Ric-wiL, Inc., Barberton, O.
Roessing Mfg. Co., Pittsburgh, Pa.
Shaw-Kendall Engineering Co., Toledo, O.
Taylor Engineering Corp., Detroit, Mich.
Thermon Mfg. Co., Houston, Tex.
Youngstown Welding & Engineering Co., Youngstown, O.

PIPE JOINT COMPOUNDS

See Cement and Compounds, Pipe Joint

PIPE LOCATORS

See Locators, Pipe, Underground

PIPE, LINED

American Cast Iron Pipe Co., Birmingham, Ala. (Cement)
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber)
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.

Arco Products, Automotive Rubber Co., Detroit, Mich.
Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Bart Mfg. Corp., Belleville, N. J.
Cement Lined Pipe Co., Lynn, Mass. (Cement)
Division Lead Co., Summit, Ill. (lead)
Gates Engineering Co., Wilmington, Del.
Goodrich Industrial Products Co., B. F., Akron, O.
Heil Process Equipment Corp., Cleveland, O.
Heresite & Chemical Co., Manitowoc, Wis. (pure phenolic baking type; synthetic rubber coating)
Hill Hubbell Co., Cleveland, O.
Jones & Laughlin Steel Corp., Pittsburgh, Pa. (plastic lined; cement lined)
Knapp Mills, Inc., Long Island City, N. Y.
Knight Co., Maurice A., Akron, O.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rubber)
Lead Lined Iron Pipe Co., Wakefield, Mass. (Lead and tin lined)
Luzerne Rubber Co., Trenton, N. J. (Hard rubber)
Michigan Pipe Co., Ferndale, Mich. (Wood, saraloy)
National Lead Co., New York, N. Y. (Lead)
Nazar Rubber Co., Toledo, O. (rubber)
Nooter Corp., St. Louis, Mo.
Raybestos-Manhattan, Inc., Passaic, N. J. (Rubber)
Resistoflex Corp., Roseland, N. J. (teflon)
Resisto Pipe & Valve Co., East Cambridge, Mass. (Lead)
Saran Lined Pipe Co., Ferndale, Mich. (saran lined)
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., New York, N. Y. (cement)
Southern Pipe Div. of U. S. Industries, Inc., Azusa, Calif.
United States Rubber Co., New York, N. Y. (Rubber)
United States Stoneware Co., New York.

PIPE, NICKEL AND NICKEL ALLOY

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Biggs Boiler Works Co., The, E. Akron, O.
Bridgeport Brass Co., Bridgeport, Conn.
Capitol Pipe & Steel Products, Inc., Philadelphia, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Crucible Steel Co. of America, Pittsburgh, Pa.
Esco Corp., Portland, Ore.
Greenville Tubes, Inc., Greenville, Pa.
Harrison Steel Corp., Brooklyn, N. Y.
Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
International Nickel Co., Inc., The, New York, N. Y.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Sheldon & Co., Inc., New York, N. Y.
Standard Tube Co., Detroit, Mich.
Trent Tube Co., East Troy, Wis.
Youngstown Sheet & Tube Co., Youngstown.
Youngstown Welding & Engineering Co., Youngstown, O.

PIPE, NICKEL PLATED

Bart Mfg. Corp., Belleville, N. J.
Chase Brass & Copper Co., Waterbury, Conn.
Sheldon & Co., Inc., New York, N. Y.

PIPE, PLASTIC

Acme-Hamilton Mfg. Corp., Trenton, N. J.
Alpha Plastics, Inc., Livingston, N. J. (PVC, rigid)
Amco Plastic Pipe Co., San Leandro, Calif. (rigid & semi-flexible)
Amercoat Corp., South Gate, Calif. (rigid epoxy, 550 psi at 130 F)
American Agile Corp., Bedford, O.
American Vulcathene Div. Nalge Co., Inc., Rochester, N. Y. (polyethylene semi-rigid, Type A ½ in. to 6 in.)
Anesite Co., Chicago, Ill. (Flexible and semi-rigid; polyethylene, butyrate, kralastic cycolac)
Argo Plastic Products, Cleveland, O. (PVC)
Atlas Mineral Products Co., Mertztown, Pa. (rigid polyvinyl chloride for service up to 150 F)
Brown Co., Boston, Mass (polyethylene)
Byers Co., A. M., Pittsburgh, Pa. (Rigid PVC; 140 F max.)
Carlon Products Corp., Aurora, O.
Chesflex Div., St. Regis Paper Co., Yonkers, N. Y. (polyethylene, flexible)
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (Rigid PVC 40 - 160 F pressures function of size, wall thickness and Temp.)
Commercial Plastics Co., Chicago, Ill. (rigid polyvinyl and polyethylene, non-rigid)
Conley Plastic Corp., Ed, Tulsa, Okla. (epoxy; rigid; pressures to 1000 psi; temp. to 350 F)
Consolidated Pipe Co. of America, Akron, O. (rigid; flexible)
Continental-Diamond Fibre Corp., Newark, Del.
Corite-Reynolds Corp., Des Plaines, Ill. (rigid fiberglas, reinforced polyester)
Crane Associates, Robert S., Columbus, O. (flexible & rigid)
Crane Co., Chicago, Ill.
Crescent Plastics, Inc., Evansville, Ind. (flexible, semi-rigid and rigid)
Danielson Mfg. Co., Danielson, Conn. (nylon)
Dow Chemical Co., Midland, Mich. (saran-lined pipe. iron or steel and saran pipe)
DuVerre, Inc., Buffalo, N. Y. (polyester bonded fiber glass)
Evanite Plastic Co.. Div. of Evans Pipe Co., Uhrichsville, O. (rigid)
Fibercast Co., Sand Spring, Okla. (rigid) 0-1000 psi; −60F to 300F)
Franklin Plastics, Inc., Franklin, Pa. (polyethylene non-rigid. Temp. not to exceed 140 F. Pressures from 40 to 104 lbs.)
General Tire & Rubber Co., Akron, O.
Goodall Rubber Co., Trenton, N. J.(flexible & rigid)
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (polyvinyl chloride rigid)
Goodrich Industrial Products Co., B. F., Akron, O. (Max. 150 F pressures to 400 psi; rigid)
Grinnell Co., Inc., Providence, R. I. (rigid PVC)
Haveg Industries, Inc., Wilmington, Del. (Resin-asbestos, polyester glass & polyvinyl chloride)
Heil Process Equipment Corp., Cleveland, O. (rigid)
Irvington Div., Minnesota Mining & Mfg. Co., Freehold, N. J. (flexible)
Johnson Plastic Corp., Chagrin Falls, O. Kralastic-rigid: to 180F; pressures: to 150 psi; Polyethylene-non-rigid)
Keasbey & Mattison Co., Ambler, Pa. (PVC; polyethylene)
Knight Co., Maurice A., Akron, O. (rigid glass cloth reinforced resin 280 F)
Kraloy Plastic Pipe Co., Inc., Los Angeles.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (PVC rigid)
Laminated Sheet Products Corp., Norwood, Mass. (rigid and non-rigid)
Lasco Industries, Montebello, Calif. (rigid and non-rigid, polyethylene, kralastic, PVC)
Luzerne Rubber Co., Trenton, N. J. (rigid-PVC)
Mannesmann-Easton Plastic Products Co., Easton, Pa. (rigid-unplasticized polyvinyl chloride)
Manufacturers Corp., Mansfield, O.
Minnesota Mining & Mfg. Co., St. Paul, Minn. (2" 180 F. 800 psi and 1200 psi operating pressure) (reinforced plastic; rigid)
National Tube Div., United States Steel Corp., Pittsburgh, Pa. (flexible polyethylene) (rigid polyvinyl chloride)
Orangeburg Mfg. Co., Orangeburg, N. Y. (polyethylene, flexible, to 150 psi)
Perfex Plastics, Inc., Chicago, Ill.
Plastex Co., Columbus, O. (non-rigid)
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif. (flexible polyethylene; semi-rigid butyrate)
Polymer Corp., The, Reading, Pa. (rigid, nylon)
Porter Co., Inc., H. K., Thermoid Div., Philadelphia, Pa.
Pyramid Industries, Inc., Erie, Pa. (polyethylene, semi-rigid and in coils; for pressures of 75, 100, 125, and 150 psi)
Pyramid Plastics, Inc., Chicago, Ill. (saran; rigid)
Rauh & Associates, Inc., Cornelius A., Akron, O. (rigid furane; up to 300 F; up to 150 psi)
Reflin Co., San Diego, Calif. (rigid, reinforced with glass fibers 200 psi; 170F)
Republic Steel Corp., Cleveland, O. (polyethylene, A.B.S. material, and butyrate; flexible & semi rigid)
Ryerson & Son, Inc., Joseph T., Chicago, Ill. (PVC rigid & non-rigid)
Santa Ana Plastics Div., Rexall Drug & Chemical Corp., Santa Ana, Calif. (PVC; rigid)
Saran Lined Pipe Co., Ferndale, Mich. (saran)
Seelye Craftsmen, Inc., Minneapolis, Minn. (rigid)
Southern Plastics Co., Columbia, S. C. (rigid, non-rigid)
Southwestern Plastic Pipe Co., Mineral Wells, Tex. (flexible, semi-rigid; polyethylene; PVC; ABS)
Telsco Fittings Div., Dallas, Tex. (Rigid PVC; 75 psi and 125 psi; 140 F max.)
Trans-Plastics Corp., Inc., Cleveland, O. (rigid and non-rigid)
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J. (flexible, semi-rigid high impact & rigid PVC)
United States Rubber Co., New York, N. Y.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Vanton Pump & Equipment Corp., Hillside, N. J. (rigid up to 225F; PVC)
Walworth Co., New York, N. Y. (rigid PVC)
Western Plastics Corp., Tacoma, Wash. (polyethylene & kralastic)
Yardley Plastics Co., Columbus, O. (rigid and non-rigid O F - 125 F)
Youngstown Sheet & Tube Co., Youngstown, O. (rigid)

PIPE PLUGS

See Plugs, Pipe

PIPE, PRE-INSULATED

Beltran Associates, Inc., Brooklyn, N. Y.
Durant Insulated Pipe Co., E. Palo Alto, Calif.
Durant Insulated Pipe Co., Inc., Cleveland.
Kaiser Co., E. B., Glenview, Ill.
Ric-wiL, Inc., Barberton, O.

PIPE REAMERS

See Reamers, Pipe

PIPE REPAIR CLAMPS

See Clamps, Pipe Repair

PIPE REPAIR KITS

See Kits, Repair for Pipes, Tanks, Valves, Flanges, and Ducts

PIPE ROTATOR AND HOLDER

See Rotator, Pipe, for Holding Pipe While Cutting, Welding

PIPE, SPIRAL, FOR HIGH VELOCITY AIR SYSTEMS

See Ducts, Spiral Welded

PIPE, SPIRAL, WELDED

Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Driam Corp., The, Manitowac, Wis.
Naylor Pipe Co., Chicago, Ill.
Taylor Forge & Pipe Wks., Chicago, Ill.

PIPE, STEAM TRACED

Aluminum Co. of America, Pittsburgh, Pa.
Ric-wiL, Inc., Barberton, O.
Thermon Mfg. Co., Houston, Tex.

PIPE, STEEL, BUTT AND LAP WELDED

Alco Products, Inc., Schenectady, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Biggs Boiler Works Co., The, E. Akron, O. (large diameter)
Central Steel & Wire Co., Chicago, Ill.
Chicago Metal Mfg. Co., Chicago, Ill.
Fretz-Moon Tube Co., Butler, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Kellogg Co., M.W., The, New York, N. Y.
Laclede Steel Co., St. Louis, Mo.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Nikoh Tube Co., Chicago, Ill.
Old Dominion Iron & Steel Corp., Richmond, Va.

Republic Steel Corp., Cleveland, O. (electric weld)
Revere Copper & Brass, Inc., New York.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla. (resistance welded)
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Southern Pipe Div. of U. S. Industries, Inc., Azusa, Calif.
Tubular Div., The National Supply Co., Pittsburgh, Pa.
Wheatland Tube Co., Philadelphia, Pa.
Wheeling Steel Corp., Wheeling, W. Va.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE, STEEL, SEAMLESS

Alco Products, Inc., Schenectady, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Esco Corp., Portland, Ore.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Phoenix Steel Corp., Phoenix Steel Tube Div., Phoenixville, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Southern Pipe Div. of U. S. Industries, Inc., Azusa, Calif.
Tubular Div., The National Supply Co., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE, STEEL, STAINLESS

Alco Products, Inc., Schenectady, N. Y.
Allegheny Ludlum Steel Corp., Pittsburgh, Pa.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
Esco Corp., Portland, Ore.
Greenville Tubes, Inc., Greenville, Pa.
Harrison Steel Corp., Brooklyn, N. Y.
Ladish Co., Cudahy, Wis.
Lucey Alloy Products Corp., Chattanooga, Tenn.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Naylor Pipe Co., Chicago, Ill.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Republic Steel Corp., Cleveland, O.
Roberts Co., C. A., Franklin Park, Ill.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Standard Tube Co., Detroit, Mich.
Swepco Tube Corp., Clifton, N. J.
Trent Tube Co., East Troy, Wis.
Union Steel Corp., Union, N. J.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE, STONEWARE

General Ceramics Div. of Indiana General Corp., Keasbey, N. J.
Knight Co., Maurice A., Akron, O. (acid-proof)
Lapp Insulator Co., LeRoy, N. Y. (porcelain)
United States Stoneware Co., New York.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O. (also porcelain)

PIPE STRESS COMPUTERS

See Computers, Pipe Stress and Other Analyses

PIPE SUPPORTS

See Hangers and Supports, Pipe

PIPE SURFACE, THERMOMETERS

See Thermometers, Indicating, Pipe Surface

PIPE THREADERS

See Stocks and Dies

PIPE, TIN

Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Bunker Hill Co., The, Sales & Fabrication Div., San Francisco, Calif.
Division Lead Co., Summit, Ill.
Enderle, Inc., Ltd., Frank X., Los Angeles.
Gardiner Metal Co., Chicago, Ill.
National Lead Co., New York, N. Y.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.

PIPE TONGS

See Tongs, Pipe

PIPE, TUBING, FITTINGS AND VALVES, CARBON AND GRAPHITE

General Ceramics Div. of Indiana Corp., Keasbey, N. J.
National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.

PIPE AND TUBING, LEAD AND LEAD ALLOY

American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Bunker Hill Co., The, Sales & Fabrication Div., San Francisco, Calif.
Division Lead Co., Summit, Ill.
Flemm Lead Co., Inc., Long Island City, N. Y.
Gardiner Metal Co., Chicago, Ill.
Knapp Mills, Inc., Long Island City, N. Y.
National Lead Co., New York, N. Y.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.
Rochester Lead Works, Inc., Rochester, N. Y.

PIPE, VITRIFIED CLAY

American Vitrified Products Co., Cleveland, O.
Bowerston Shale Co., The, Bowerston, O.
General Ceramics Div. of Indiana Corp., Keasbey, N. J.
Heat Transmission Conduit Co., Cleveland, O.
Logan Clay Products, Logan, O.
National Clay Pipe Mfg. Inc., Washington, D. C.
Robinson Clay Product Co., The, Akron, O.
Straitsville Brick Co., New Straitsville, O.
Superior Clay Corp., The, Uhrichsville, O.
Texas Vitrified Pipe Co., Mineral Wells, Tex.
United States Concrete Pipe Co., Universal Sewer Pipe Div., Cleveland, O.

PIPE WRENCHES

See Wrenches, Pipe

PIPE, WROUGHT IRON

Byers Co., A. M., Pittsburgh, Pa.

PIPING, FABRICATED

See Bends, Expansion, Steam Pipe; Headers, Pipe, Welded; Coils, Pipe

PIPING IDENTIFICATON MARKERS

See Identification Markers for Piping Services

PISTON RINGS

See Rings, Piston

PITOT TUBES

See Tubes, Pitot

PITTSBURGH LOCK FORMING MACHINES

See Machines, Pittsburgh Lock Forming

PLASTIC PIPE METAL INSERTS

See Inserts, Metals, for Plastic Pipe

PLASTIC PIPE AND PIPE FITTINGS

See Pipe, Plastic; Fittings, Pipe, Plastic

PLASTIC PIPE AND SHEET WELDERS

See Welders, for Plastic Pipe or Plastic Sheet

PLASTIC SHEETS FOR DUCTS AND HOODS

See Sheets, Plastic for Ducts and Hoods

PLASTIC TUBING

See Tubing, Plastic

PLASTICS, POWDERS AND RESINS (BASIC MATERIALS)

Allied Chemical Corp., Plastics Div., New York, N. Y.
Chemical Coatings & Engineering Co., Media, Pa.
Chemicals Div., Firestone Plastics Co., Pottstown, Pa.
Devcon Corp., Danvers, Mass. (epoxy)
Dow Chemical Co., The, Midland, Mich.
Dow Corning Co., Midland, Mich.
du Pont de Nemours & Co., E. I. Polychemicals Dept., Wilmington, Del. (nylon, polyethylene, fluorocarbon, acrylic & acetal resins)
Durex Plastics Div., Hooker Chemical Corp., North Tonawanda, N. Y.
Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co., Kingsport, Tenn.
Enjay Co., New York, N. Y.
General Electric Co., Chemical Materials Dept., Pittsfield, Mass. (phenolic) (polycarbonate resin)
General Tire & Rubber Co., Akron, O.
Goodrich Chemical Co., B. F., Cleveland, O.
Hercules Powder Co., Wilmington, Del. (polypropylene; high density polyethylene; chlorinated polyether)
Interchemical Corp., Finishes Div., Newark, N. J. (IC polyester resins)
Koppers Co., Inc., Pittsburgh, Pa.
Metal & Thermit Corp., Rahway, N. J.
Monsanto Chemical Co., Springfield, Mass.
Mueller Brass Co., Port Huron, Mich.
Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Plastics Div., Eastman Chemical Products, Inc., Kingsport, Tenn. (acetate, butyrate, propionate, polyethylene, polypropylene)
Polymer Corp., The, Reading, Pa.
Reihhold Chemicals, Inc., White Plains, N. Y.
Reynolds Metals Co., Richmond, Va.
Standard Oil Co. of New Jersey, New York, N. Y.
Union Carbide Plastics Co., Div. of Union Carbide Corp., New York, N. Y.

PLATES, FLOOR AND CEILING

American Sanitary Mfg. Co., Abingdon, Ill.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Beaton & Corbin Mfg. Co., Southington, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Specialty Mfg. Co., Chicago, Ill.
Eastern Stainless Steel Corp., Baltimore, Md. (stainless steel)
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
G & H Mfg. Co., Philadelphia, Pa.
Globe Products, Huppower Div., Hupp Corp., Detroit, Mich.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Providence, R. I.
Inland Steel Co., Chicago, Ill.
Keeney Mfg. Co., Newington, Conn.
Little Brass Goods Co., M. S., Hartford, Conn.
Modern Hanger Corp., The, Cleveland, O.
New York Air Valve Corp., Brooklyn, N. Y.
Reynolds Metals Co., Richmond, Va. (aluminum)
Ritter Pattern & Casting Co., Inc., New York, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
U. S. Expansion Bolt Co., York, Pa.
U. S. Plug & Fitting Co., Wellington, O.
Zurn Industries, Inc., Erie, Pa.

PLUGS, CAPS AND CLOSURES FOR PROTECTING PIPE AND TUBE FITTINGS

Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.

Clover Industries, Inc., Tonawanda, N. Y.
Grinnell Co., Inc., Providence, R. I.
Ladish Co., Cudahy, Wis.
Pipe Plugs, Inc., Wellington, O.
Plastiline, Inc., Pompano Beach, Fla. (plastic)
Protective Closures Co., Inc., Caplugs Div., Buffalo, N. Y.
Shurclose Seal Co., Detroit, Mich.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
U. S. Plug & Fitting Co., Wellington, O.
Wedge Protectors, Inc., Cleveland, O.

PLUG COCKS

See Valves, Plug

PLUG VALVES

See Valves, Plug

PLUGS, FUSIBLE, BOILER

Allen Mfg. Co., W. D., Bellwood, Ill.
Chicago Specialty Mfg. Co., Chicago, Ill.
Chiksan Co., Brea, Calif.
Division Lead Co., Summit, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lamson & Sessions Co., The, Cleveland, O.
Lunkenheimer Co., Cincinnati, O.
Mueller Brass Co., Port Huron, Mich.
Swift Lubricator Co., Inc., Elmira, N. Y.

PLUGS, PIPE, MAGNETIC, FOR REMOVING FERROUS PARTICLES

Pipe Plugs, Inc., Wellington, O.
U. S. Plug & Fitting Co., Wellington, O.

PLUGS, PIPE, PRESSURE

Anderson & Grunsky, Santa Cruz, Calif.
Brabant Brass Mfg. Co., Detroit, Mich.
Camco Fittings, Inc., North Haven, Conn
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Fibercast Co., Sand Spring, Okla.
Grabler Mfg. Co., Cleveland, O.
Ladish Co., Cudahy, Wis.
Pipe Plugs, Inc., Wellington, O.
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Stockham Valves & Fittings, Birmingham, Ala.
U. S. Plug & Fitting Co., Wellington, O.
Ward Foundries, Inc., J. P., Blossburg, Pa.

PLUGS, REPAIR, FOR PIPE

Adams Pipe Repair Products, So. El Monte, Calif.
Baker & Co., R. H., Los Angeles, Calif.
Kuhns Bros. Co., Dayton, O.
Ladish Co., Cudahy, Wis.
Parker-Kalon, A Div. of Gen. Am. Trans. Corp., Clifton, N. J.
Pipe Plugs, Inc., Wellington, O.
Shurclose Seal Co., Detroit, Mich.
U. S. Plug & Fitting Co., Wellington, O.
Williamson, Inc., T. D., Tulsa, Okla.

PLUGS, REPAIR, FOR TANKS

Adams Pipe Repair Products, So. El Monte, Calif.
Baker & Co., R. H., Los Angeles, Calif.
Brabant Brass Mfg. Co., Detroit, Mich.
Chicago Specialty Mfg. Co., Chicago, Ill.
Kenney Co., L. C., Chicago, Ill.
Parker-Kalon, A Div. of Gen. Am. Trans. Corp., Clifton, N. J.
Pipe Plugs, Inc., Wellington, O.
Standard Pressed Steel Co., Jenkintown, Pa.
Tankit Co., The, Newark, N. J.
U. S. Plug & Fitting Co., Wellington, O.

PLUGS, TUBING TEST

Anderson & Grunsky, Santa Cruz, Calif.
Chicago Specialty Mfg. Co., Chicago, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Mechanical Products Corp., Chicago, Ill.
Shurclose Seal Co., Detroit, Mich.

PORTABLE ELECTRIC SNOW MELTER

See Snow Melter, Portable, Electric

PORTS, OBSERVATION, BOILER

Bigelow Liptak Corp., Detroit, Mich.
Detroit Stoker Co., Monroe, Mich.
Green Fire Brick Co., Mexico, Mo.
National Airoil Burner Co., Inc., Philadelphia, Pa.
Photomation, Inc., Bergenfield, N. J.
Plibrico Co., Chicago, Ill.
Preferred Utilities Mfg. Corp., New York, N. Y.
Reintjes Co., Geo. P., Kansas City, Mo.
Springfield Boiler Co., Springfield, Ill.

POSITIONERS, DRILL, FOR DRILLING HOLES AT REGULAR INTERVALS IN PIPE

Bux Magnetic Products, Inc., San Jose, Calif.
Eisler Engineering Co., Inc., Newark, N. J.
Hanna Engineering Works, Chicago, Ill.

POSITIONERS, WELDING

Aronson Machine Co., Arcade, N. Y.
Bux Magnetic Products, Inc., San Jose, Calif.
Eisler Engineering Co., Inc., Newark, N. J.
Hanna Engineering Works, Chicago, Ill.
Johnson Machine Works, Eau Claire, Wis.
Peck Co., Cecil C., Cleveland, O.
Rexarc, Inc., West Alexandria, O. (automatic; submerged arc)
Webb Corp., The, Webb City, Mo.
Weldit, Inc., Detroit, Mich.

POWDER OPERATED FASTENERS

See Fasteners, Powder Operated

POWER FACTOR CORRECTION

See Capacitors

POWER SHEARS

See Shears, Power

PREHEATERS, FUEL OIL

Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Alco Products, Inc., Schenectady, N. Y.
Alstrom Corp., New York, N. Y.
American-Standard Industrial Div., Detroit.
Andale Co., Philadelphia, Pa.
Bell & Gossett Co., Morton Grove, Ill.
Best Combustion Equipment Co., Inc., W. N., Little Ferry, N. J.
Bros, Inc., Minneapolis, Minn.
Brown Fintube Co., Elyria, O.
Buxton Mfg. Co., Dover, N. J.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Crotty Mfg. Co., Flushing, L. I., N. Y.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Dean Products, Inc., Brooklyn, N. Y.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa
Doyle & Roth Mfg. Co., Inc., Brooklyn, N. Y.
Drying Systems Co., Chicago, Ill.
Electro-Therm, Inc., Silver Spring, Md.
Engineer Co., New York, N. Y.
Falcon Equipment Co., New Brighton, Pa.
General Fittings Co., East Greenwich, R. I.
Griscom-Russell Co., Massillon, O.
Hauck Mfg. Co., Brooklyn, N. Y.
Heatron, Inc., York, Pa.
Heatube Dept., Albion Div., McGraw-Edison Co., Albion, Mich.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Industrial Engineering & Equipment Co., St. Louis, Mo. (Electric)
Johnson Corp., The, Three Rivers, Mich.
Killebrew Engineering Corp., St. Louis, Mo.
Leahy Mfg. Co., Los Angeles, Calif.
Lientz Co., B. P., Kansas City, Mo.
Lindy Heaters, Inc., Bronx, N. Y.
Manning & Lewis Engineering Co., Union, N. J.
Mar-Coil Heater Co., Union City, N. J.
National Airoil Burner Co., Inc., Philadelphia, Pa.
National Pipe Bending Co., New Haven, Conn.
Old Dominion Iron & Steel Corp., Richmond, Va.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Preferred Utilities Mfg. Corp., New York, N. Y.
Rempe Co., Chicago, Ill.
Richmond Engineering Co., Richmond, Va.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sims Co., Erie, Pa.
Staples & Pfeiffer, San Francisco, Calif.
Superior Combustion Industries, Inc., New York, N. Y.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Todd Shipyards Corp., Products Div., Brooklyn, N. Y.
Tranter Mfg., Inc., Lansing, Mich.
Trent Inc., Philadelphia, Pa.
Vulcan Electric Co., Danvers, Mass.
Waage Electric, Inc., Kenilworth, N. J.
Water Tube Boiler & Tank Co., Chicago, Ill.
Whitlock Mfg. Co., W. Hartford, Conn.
Wiegand Co., Edwin L., Pittsburgh, Pa. (Electric)
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.
Yula Corp., Bronx, N. Y.

PREHEATERS AND STRESS RELIEVERS, ELECTRIC, FOR PIPE WELDS

Electric Arc, Inc., Newark, N. J.
Falcon Equipment Co., New Brighton, Pa.
Heatube Dept., Albion Div., McGraw-Edison Co., Albion, Mich.
Hobart Bros. Co., Troy, O.
Trent Inc., Philadelphia, Pa.
Universal Welder Corp., Cleveland, O.
Vulcan Electric Co., Danvers, Mass.
Wiegand Co., Edwin L., Pittsburgh, Pa.

PRE-INSULATED PIPE

See Pipe, Pre-Insulated

PRESSURE BLOWERS

See Blowers, High Pressure

PRESSURE CONTROLLERS

See Regulators, Pressure

PRESSURE GAGES

See Gages, Indicating, Pressure

PRESSURE INDICATOR-CONTROLLERS

See Indicator-Controllers, Pressure

PRESSURE RECORDER-CONTROLLERS

See Recorder-Controllers, Pressure

PRESSURE RECORDERS

See Recorders, Pressure and Vacuum

PRESSURE REDUCING VALVES

See Valves, Pressure Reducing and Regulating

PRESSURE REGULATING VALVES

See Valves, Pressure Reducing and Regulating

PRESSURE REGULATORS

See Regulators, Pressure

PRESSURE SWITCHES

See Switches, Pressure and Vacuum

PROCESS HEATING SYSTEMS

See Systems, Process Heating, High Temperature

PROCESS STEAM SUPERHEATERS

See Superheaters, Process Steam

PROCESS AND STORAGE TANKS

See Tanks, Process and Storage

PROPANE VAPORIZERS

See Vaporizers

PROPELLER FANS

See Fans, Propeller

PROPELLER PUMPS

See Pumps, Propeller

PROPORTIONING PUMPS

See Pumps, Proportioning

PROTECTIVE COATINGS

See Coatings, Protective, for Metals

PROTECTORS, GAGE GLASS

Blossom Mfg. Co., Inc., Brooklyn, N. Y.
Ernst Water Column & Gauge Co., Livingston, N. J.
Huyette Co., Inc., Paul B., Philadelphia, Pa.
Industrial Engineering Corp., Louisville, Ky.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Reliance Gauge Column Co., Cleveland, O.

PROTECTORS, PIPE COVERING

American Sisalkraft Corp., Attleboro, Mass.
Baldwin-Ehret-Hill, Inc., Trenton, N. J.
Bigelow Liptak Corp., Detroit, Mich.
Blaw Knox Co., Power Piping Div., Pittsburgh, Pa.
Blossom Mfg. Co., Inc., Brooklyn, N. Y.
Carpenter & Paterson, Inc., Cambridge, Mass.
Childers Mfg. Co., Houston, Tex.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
General Aluminum Supply Co., Kansas City, Mo.
Grant Wilson, Inc., Chicago, Ill.
Grinnell Co., Inc., Providence, R. I.
Insul-Coustic, Inc., Maspeth, L.I., N. Y.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Modern Hanger Corp., The, Cleveland, O.
Poe Co., C. W., The, Cleveland, O. (Alum. jacketing)
Rector Mineral Trading Corp., New York, N. Y.
Smith Products Co., Novi, Mich.
U. S. Rubber Co., New York, N. Y. (rubber and fabric)
Witco Chemical Co., Inc., Pioneer Products Div., New York, N. Y.
Zippertubing Co., The, Los Angeles, Calif.

PSYCHROMETERS, MOTOR ASPIRATED

American Moistening Co., Cleveland, N. C.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Desomatic Products Div., Atlantic Research Corp., Falls Church, Va.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Corp., Baltimore, Md.
G. M. Mfg. Co., New York, N. Y.
H-B Instrument Co., Philadelphia, Pa.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Johnson Service Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N.Y.
Scientific Instrument Co., Detroit, Mich.
Universal Instruments Co., Brentwood, Md.
Weksler Instruments Corp., Freeport, L. I., N. Y.

PSYCHROMETERS, SLING AND HAND ASPIRATED

Abbeon Supply Co., Jamaica, N. Y.
Airserco Mfg. Co., Pittsburgh, Pa.
American Moistening Co., Cleveland, N. C.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Corp., Baltimore, Md.
G. M. Mfg. Co., New York, N. Y.
Garden City Instruments, Inc., Evanston, Ill.
General Scientific Equipment Co., Philadelphia, Pa.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Grinnell Co., Inc., Providence, R. I.
H-B Instrument Co., Philadelphia, Pa.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Johnson Service Co., Milwaukee, Wis.
Kent-Moore Organization, Inc., Warren, Mich.
Moeller Instrument Co., Richmond Hill, N.Y.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Parks-Cramer Co., Fitchburg, Mass.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Robinair Mfg. Corp., Montpelier, O.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine & Metals, Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I., N. Y.

PSYCHROSTATS

See Humidistats

PULLEYS AND SHEAVES, FOR BELT DRIVES

American Pulley Co., Div. Van Norman Industries, Inc., Philadelphia, Pa. (adjustable diameter)
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Browning Mfg. Co., Maysville, Ky.
Central Die Casting & Mfg. Co., Inc., Chicago, Ill. (V belt)
Chicago Die Casting Mfg. Co., Chicago, Ill. (V-type and flat type)
Climax Metal Products Co., Cleveland, O. (V-belt and variable pitch)
Congress Drives Div., Tann Corp., Detroit, Mich. (V belt—fractional horsepower)
Dayco Corp., Dayton, O.
Dodge Mfg. Corp., Mishawaka, Ind.
Durkee-Atwood Co., Minneapolis, Minn. (V-Belt)
Duro Metal Products Co., Chicago, Ill. (steel & diecast)
Ft. Worth Steel & Machinery Co., Ft. Worth, Texas
Gates Rubber Co., The, Denver, Colo.
Goldens' Foundry & Machine Co., Columbus, Ga. (Cast iron)
Hewitt-Robins, Inc., Stamford, Conn. (Tapered cone, conveyor, flanged, grooved for round or V-Belt, iron, loose, motor, power transmission)
Hi-Lo Mfg. Co., Minneapolis, Minn. (variable pitch)
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill. (flat)
Lau Blower Co., Dayton, O.
Lewellen Mfg. Co., Columbus, Ind. (variable speed pulleys)
Lovejoy Flexible Coupling Co., Chicago, Ill. (variable speed pulleys, v-belt sheaves)
Maurey Mfg. Corp., Chicago, Ill. (Flat belt, v-belt steel and cast iron)
Mercury Clutch Div., Automatic Steel Products, Inc., Canton, O.
Morse Chain Co., Ithaca, N. Y. (sprockets for timing belt-drives)
Pyott Foundry and Machine Co., Aurora, Ill.
Reeves Pulley Co., Div. of Reliance Electric & Engineering Co., Columbus, Ind. (variable speed)
Speed Selector Inc., Chagrin Falls, O. (variable pitch)
Sprout-Waldron & Co., Inc., Muncy, Pa. (cast iron standard pulleys)
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Wood's Sons Co., T. B., Chambersburg, Pa.
Worthington Corp., Harrison, N. J. (v-type)
Zatko Metal Products Co., Euclid, O. (stamped-one piece)

PULVERIZED COAL BURNERS

See Burners, Pulverized Coal

PUMP BASES

See Bases, Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type

PUMP CONTROLS FOR STARTING AND STOPPING PUMPS

See Controls, for Starting and Stopping Pumps

PUMP-MOTOR UNITS, CLOSE-COUPLED

Advance Pump Co., Berkeley, Calif.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Berkeley Pump Co., Berkeley, Calif.
Blackmer Pump Co., Grand Rapids, Mich.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Carver Pump Co.. Muscatine, Ia.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Dean Hill Pump Co., Indianapolis, Ind.
Decatur Pump Co., Decatur, Ill.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dynapump Div., Fostoria Corp., Huntingdon Valley, Pa. (canned motor)
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eco Engineering Co., Newark, N. J.
Federal Pump Corp., Brooklyn, N. Y.
Gelber & Sons, Inc., S., Chicago, Ill.
Gorman-Rupp Co., Mansfield, O.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Haskel Engineering & Supply Co., Glendale, Calif.
Hydropump, Inc., Pasadena, Calif.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Costa Mesa, Calif.
LaBour Co., Inc., The, Elkhart, Ind.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Layne & Bowler, Inc., Memphis, Tenn.
Lecourtenay Co., Newark, N. J.
Marlow Pumps, Div. of Bell & Gossett Co., Midland Park, N. J.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Memphis Pump & Mfg. Co., Memphis, Tenn.
Myers & Bro. Co., F. E., The, Ashland, O.
Nash Engineering Co., South Norwalk, Conn.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit. Mich.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Red Jacket Mfg. Co., Davenport, Ia.
Roper Hydraulics, Inc., Commerce, Ga.
Ruthman Machinery Co., Cincinnati, O.
Scot Pump Co., Thiensville, Wis.
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Skidmore Corp., St. Joseph, Mich.
Sta-Rite Products, Inc., Delavan, Wis.
Sundstrand Hydraulics, Rockford, Ill.
Swaby Mfg. Co., Chicago, Ill.
Taco Heaters, Inc., Cranston, R. I.
Tuthill Pump Co., Chicago, Ill.
Uniflow Mfg. Co., Erie, Pa.
Vanton Pump & Equipment Corp., Hillside, N. J.
Viking Pump Co., Cedar Falls, Ia.
Warren Pumps, Inc., Warren, Mass.
Webster Electric Co., Racine, Wis.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Whitewater Pump Co., Inc., Whitewater, Wis.
Wire Products Co., Baltimore, Md.
Worthington Corp., Harrison, N. J.

PUMP UNITS, FUEL OIL

See Units, Fuel Oil, Heating, Pumping and Straining

PUMP VALVES

See Valves, Pump

PUMPS, BOILER FEED

Aldrich Pump Co., Allentown, Pa.
Allied Industries, Inc., Upper Sandusky, O.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Hydrovac, Div. Pitz Foundry, Inc., Brooklyn, N. Y.
American-Marsh Pumps, Inc., Battle Creek, Mich.
American Meter Co., Pump Div., Philadelphia, Pa.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Berkeley Pump Co., Berkeley, Calif.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Cissell Mfg. Co., Inc., W. M., Louisville, Ky.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Coffin Turbo Pump, Hydrodynamics Div., Food Machinery & Chemical Corp., Englewood, N. J.

Columbus Steam Pump Wks. Co., Columbus, O.
Cyclotherm Div., Crane Co., Oswego, N. Y.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Dean Hill Pump Co., Indianapolis, Ind.
Decatur Pump Co., Decatur, Ill.
De Laval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Harford, Conn.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Frederick Iron & Steel Inc., Frederick, Md.
Gardner-Denver Co., Quincy, Ill.
Gelber & Sons, Inc., S., Chicago, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Hills-McCanna Co., Chicago, Ill.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Ingersoll-Rand Co., New York, N. Y.
Johnson Corp., The, Three Rivers, Mich.
Johnston Pump Co., A Div. of Youngstown Sheet & Tube Co., Pasadena, Calif.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Lattner Mfg. Co., P. M., Cedar Rapids, Iowa.
Lawrence Pump & Engine Co., Lawrence, Mass.
Lecourtenay Co., Newark, N. J.
Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
Nash Engineering Co., South Norwalk, Conn.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Preferred Utilities Mfg. Corp., New York.
Robbins & Myers, Inc., Springfield, O.
Roth Co., Roy E., Rock Island, Ill.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Scot Pump Co., Thiensville, Wis.
Skidmore Corp., St. Joseph, Mich.
Sta-Rite Products, Inc., Delavan, Wis.
Sterling, Inc., Milwaukee, Wis.
Stout & Sons, David, St. Louis, Mo.
Swaby Mfg. Co., Chicago, Ill.
Union Pump Co., Battle Creek, Mich.
United Centrifugal Pumps, Oakland, Calif.
Universal Mfg. Co., Berkeley, Calif.
Warren Pumps, Inc., Warren, Mass.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Worthington Corp., Harrison, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, CENTRIFUGAL

Advance Pump Co., Berkeley, Calif.
Allied Industries, Inc., Upper Sandusky, O.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Hydrovac, Div. Pitz Foundry, Inc., Brooklyn, N. Y.
American-Marsh Pumps, Inc., Battle Creek, Mich.
American Well Wks., Aurora, Ill.
Ampco Metal, Inc., Milwaukee, Wis.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes Manufacturing Co., Mansfield, O.
Barrett Haentjens & Co., Hazleton, Pa.
Bart Mfg. Corp., Belleville, N. J.
Bell & Gossett Co., Morton Grove, Ill.
Berkeley Pump Co., Berkeley, Calif.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Carver Pump Co., Muscatine, Ia.
Chain Belt Co., Milwaukee, Wis.
Chemtrol, Plastic Piping Systems Equipment, Santa Ana, Calif. (plastic)
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Coffin Turbo Pump, Hydrodynamics Div., Food Machinery & Chemical Corp., Englewood, N. J.
Columbus Steam Pump Wks. Co., Columbus.
Corcoran Co., R. S., Joliet, Ill.
Corley Co., Inc., The, Bounton, N. J.
Davidson Co., M. T., New York, N. Y.
Dayton Electric Mfg. Co., Chicago, Ill.
Dean Brothers Pumps, Inc., Indianapolis.
Dean Hill Pump Co., Indianapolis, Ind.
Dearborn Chemical Co., Chicago, Ill.
Decatur Pump Co., Decatur, Ill.
DeLaval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Duriron Co., Inc., Dayton, O. (corrosion resisting)
Duro Co., The, Dayton, O.
Dynapump Div., Fostoria Corp., Huntingdon Valley, Pa. (magnetically driven, canned motors)
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eastern Industries, Inc., Hamden, Conn.
Eco Engineering Co., Newark, N. J.
Essick Mfg. Co., Los Angeles, Calif.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Frederick Iron & Steel Inc., Frederick, Md.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Gardner-Denver Co., Quincy, Ill.
Gelber & Sons, Inc., S., Chicago, Ill.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (chemical plastic and alumina, porcelain and graphite)
Gilbert & Barker Mfg. Co., West Springfield, Mass.
Goodfellow Co., Inc., F. D., Memphis, Tenn.
Gorman-Rupp Co., Mansfield, O.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Granberg Corp., Subsid. of American Meter Co., Inc., Oakland, Calif.
Hoffman Specialty Mfg. Corp., Indianapolis.
Hydropump, Inc., Pasadena, Calif.
Industrial Filter & Pump Co., Cicero, Ill.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Costa Mesa, Calif.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Kingsford Foundry & Machine Wks., Oswego, N. Y.
La Bour Co., Inc., The, Elkhart, Ind.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Lawrence Pump Inc., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Layne & Bowler, Inc., Memphis, Tenn.
Lead Lined Iron Pipe Co., Wakefield, Mass. (lead lined and all lead)
Lecourtenay Co., Newark, N. J.
Leyman Mfg. Corp., McGowan Pump Div., Cincinnati, O. (self-priming; complete with own power source)
Little Giant Pump Div., Little Giant Corp., Oklahoma City, Okla.
Luzerne Rubber Co., Trenton, N. J. (Hard rubber)
Marlow Pumps, Division of Bell & Gossett Co., Midland Park, N. J.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Memphis Pump & Mfg. Co., Memphis, Tenn.
Midwest Pump Div. of Sherwood Mfg. Co., Independence, Mo.
Morris Machine Works, Baldwinsville, N. Y.
Myers & Bro Co., F. E., The, Ashland, O.
National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
National Lead Co., New York, N. Y.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif
Pennsylvania Pump & Compressor Co., Easton, Pa.
Price Pump Co., E. L., Sonoma, Calif.
Radiant Utilities Corp., Brooklyn, N. Y.
Red Jacket Mfg. Co., Davenport, Ia.
Ruthman Machinery Co., Cincinnati, O.
Saran Lined Pipe Co., Ferndale, Mich. (Saran Lined)
Scot Pump Co., Thiensville, Wis.
Skidmore Corp., St. Joseph, Mich.
Standard Electric Mfg. Co., West Berlin, N. J.
Sta-Rite Products, Inc., Delavan, Wis.
Sterling, Inc., Milwaukee, Wis.
Sutton Mfg. Co., Norfolk, Va.
Swaby Mfg. Co., Chicago, Ill.
Taber Pump Co., Buffalo, N. Y.
Taco Heaters, Inc., Cranston, R. I.
Union Pump Co., Battle Creek, Mich.
United Centrifugal Pumps, Oakland, Calif.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Vanton Pump & Equipment Corp., Hillside, N. J.
Warren Pumps, Inc., Warren, Mass.
Waukesha Foundry Co., Waukesha, Wis.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.
Whitewater Pump Co., Inc., Whitewater, Wis.
Wilson-Snyder Wks., Oil Well Supply Div., U. S. Steel Corp., Braddock, Pa.
Wire Products Co., Baltimore, Md.
Worthington Corp., Harrison, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, CONDENSATE, FOR REMOVING CONDENSATION FROM AIR CONDITIONING UNITS

For removal of water condensed from air on cooling and dehumidifying coils.

For Condensate Return Pumps, see Pumps, Condensate Return. For Air Conditioning Pumps, see Pumps of various types, such as pumps, Centrifugal and others

American Comfort Mfg. Co., Evanston, Ill.
Asncraft Co., J. P., Dallas, Tex.
Beach-Russ Co., New York, N. Y.
Berkeley Pump Co., Berkeley, Calif.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Central Scientific Co., Chicago, Ill.
Davidson Co., M. T., New York, N. Y.
Deming Co., Salem, O.
Eddington Metal Specialty Co., Eddington, Pa.
Federal Pump Corp., Brooklyn, N. Y.
Gelber & Sons, Inc., S., Chicago, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Little Giant Pump Div., Little Giant Corp., Oklahoma City, Okla.
March Mfg. Co., Inc., Skokie, Ill.
Midwest Pump Div. of Sherwood Mfg. Co., Independence, Mo.
Myers & Bro. Co., F. E., The, Ashland, O.
Nash Engineering Co., South Norwalk, Conn.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Palmer Electric Co., Inc., Detroit, Mich.
Scot Pump Co., Thiensville, Wis.
Sterling, Inc., Milwaukee, Wis.
Warren Pumps, Inc., Warren, Mass.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.

PUMPS, CONDENSATE RETURN

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Hydrovac, Div. Pitz Foundry, Inc., Brooklyn, N. Y.
American Marsh Pumps, Inc., Battle Creek, Mich.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes & Jones, Inc., Newtonville, Mass.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Cissell Mfg. Co., Inc., W. M., Louisville, Ky.
Cochrane Corp., Philadelphia, Pa.
Coffin Turbo Pump, Hydrodynamics Div., Food Machinery & Chemical Corp., Englewood, N. J.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Columbus Steam Pump Wks. Co., Columbus, O.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Dean Hill Pump Co., Indianapolis, Ind.
Decatur Pump Co., Decatur, Ill.
Deming Co., Salem, O.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.

Dunham-Bush, Inc., West Hartford, Conn.
Dynapump Div., Fostoria Corp., Huntingdon Valley, Pa. (canned motor)
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eastern Industries, Inc., Hamden, Conn.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Foster Wheeler Corp., New York, N. Y.
Frederick Iron & Steel Inc., Frederick, Md.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Hartell, Inc., Warminster, Pa.
Heating Assurance, Inc., Spokane, Wash.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Burbank, Calif.
Johnson Corp., The, Three Rivers, Mich.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Kisco Boiler & Engineering Co., St. Louis.
Lattner Mfg. Co., P. M., Cedar Rapids, Iowa
Lawrence Pump & Engine Co., Lawrence, Mass.
Lookout Boiler & Mfg. Co., Chattanooga, Tenn.
Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
Nash Engineering Co., South Norwalk, Conn.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Roth Co., Roy E., Rock Island, Ill.
Sarco Co., Inc., New York, N. Y.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Scot Pump Co., Thiensville, Wis.
Sellers Engineering Co., Chicago, Ill.
Skidmore Corp., St. Joseph, Mich.
Sta-Rite Products, Inc., Delavan, Wis.
Sterling, Inc., Milwaukee, Wis.
Stout & Sons, David, St. Louis, Mo.
Swaby Mfg. Co., Chicago, Ill.
Union Pump Co., Battle Creek, Mich.
Universal Mfg. Co., Berkeley, Calif.
Warren Pumps, Inc., Warren, Mass.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Worthington Corp., Harrison, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, CONTROLLED VOLUME

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Meter Co., Pump Div., Philadelphia, Pa.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Dearborn Chemical Co., Chicago, Ill.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Hills-McCanna Co., Chicago, Ill.
Lapp Insulator Co., LeRoy, N. Y.
Madden Corp., The, Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Tri-Rotor, Inc., Torrington, Conn.
Ulrich Mfg. Co., Bump Pump Div., Roanoke, Ill.
Wallace & Tiernan, Inc., Belleville, N. J.

PUMPS, DEEP WELL

Advance Pump Co., Berkeley, Calif.
American Well Wks., Aurora, Ill.
Berkeley Pump Co., Berkeley, Calif.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Clayton Mark & Co., Evanston, Ill.
Davidson Co., M. T., New York, N. Y.
Decatur Pump Co., Decatur, Ill. (shallow well)
Deming Co., Salem, O.
Duro Co., Dayton, O.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Fiese & Firstenberger Mfg., Inc., Fresno, Calif.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa. (submersible)
Layne & Bowler, Inc., Memphis, Tenn.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Myers & Bro. Co., F. E., The, Ashland, O.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Red Jacket Mfg. Co., Davenport, Ia.
Sta-Rite Products, Inc., Delavan, Wis.
Sumo Pumps, Inc., Stamford, Conn. (submersible)
Uniflow Mfg. Co., Erie, Pa.
Whitewater Pump Co., Inc., Whitewater, Wis.
Wintroath Pump, Div. of Worthington Corp., Alhambra, Calif.
Worthington Corp., Harrison, N. J.

PUMPS, EVAPORATIVE COOLER

Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Carver Pump Co., Muscatine, Ia.
Deming Co., Salem, O.
Dynapump Div., Fostoria Corp., Huntingdon Valley, Pa. (canned motor)
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Essick Mfg. Co., Los Angeles, Calif.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Ingersoll-Rand Co., New York, N. Y.
International Metal Products, Phoenix, Ariz.
Jabsco Pump Co., Costa Mesa, Calif.
Krueger Air Conditioning Co., Tucson, Ariz.
Little Giant Pump Div., Little Giant Corp., Oklahoma City, Okla.
Midwest Pump Div. of Sherwood Mfg. Co., Independence, Mo.
Myers & Bro. Co., F. E., The, Ashland, O.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Ruthman Machinery Co., Cincinnati, O.
Scot Pump Co., Thiensville, Wis.
Taco Heaters, Inc., Cranston, R. I.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles, Calif.
Warren Pumps, Inc., Warren, Mass.
Weinman Pump Mfg. Co., The, Columbus, O.
Wright Mfg. Co., Phoenix, Ariz.

PUMPS, FIRE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Barnes Manufacturing Co., Mansfield, O.
Berkeley Pump Co., Berkeley, Calif.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Davidson Co., M. T., New York, N. Y.
De Laval Steam Turbine Co., Trenton, N. J.
Fairbanks, Morse & Co., Chicago, Ill.
Frederick Iron & Steel Inc., Frederick, Md.
Gardner-Denver Co., Quincy, Ill.
Goodyear Pumps, Inc., New York, N. Y. (portable)
Gorman-Rupp Co., Mansfield, O.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Layne & Bowler, Inc., Memphis, Tenn.
Lecourtenay Co., Newark, N. J.
Marlow Pumps, Division of Bell & Gossett Co., Midland Park, N. J.
Myers & Bro. Co., F. E., The, Ashland, O.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Pacific Pumping Co., Oakland, Calif.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Royalton Co., Inc., Gasport, N. Y.
Solar Aircraft Co., San Diego, Calif. (gas turbine)
Universal Mfg. Co., Berkeley, Calif.
Viking Pump Co., Cedar Falls, Ia.
Warren Pumps, Inc., Warren, Mass.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.
Worthington Corp., Harrison, N. J.

PUMPS, GEAR

American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
DeLaval Steam Turbine Co., Trenton, N. J.
Eastern Industries, Inc., Hamden, Conn.
Eco Engineering Co., Newark, N. J.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Gelber & Sons, Inc., S., Chicago, Ill.
Granberg Corp., Subsid. of American Meter Co., Inc. Oakland, Calif.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich. (hydraulic)
Mechanical Products Corp., Chicago, Ill.
Myers & Bro. Co., F. E., The, Ashland, O.
Northern Ordnance Inc., Subsidiary of Northern Pump Co., Minneapolis, Minn.
Novo Pump & Engine Co., Lansing, Mich.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Owatonna Tool Co., Owatonna, Minn. (hydraulic)
Price Pump Co., E. L., Sonoma, Calif.
Roper Hydraulics, Inc., Commerce, Ga.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Tuthill Pump Co., Chicago, Ill.
Viking Pump Co., Cedar Falls, Ia. (500 psi)
Warren Pumps, Inc., Warren, Mass.
Webster Electric Co., Racine, Wis.
Worthington Corp., Harrison, N. J.

PUMPS, HIGH PRESSURE, HYDRAULIC

Aldrich Pump Co., Allentown, Pa.
Allied Industries, Inc., Upper Sandusky, O.
American Engineering Co., Div. of United Industrial Corp., Philadelphia, Pa.
American Instrument Co., Inc., Silver Spring, Md.
American-Marsh Pumps, Inc., Battle Creek, Mich.
American Meter Co., Pump Div., Philadelphia, Pa.
Autoclave Engineers Sales Corp., Erie, Pa.
Blackhawk Mfg. Co., Milwaukee, Wis.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Coffin Turbo Pump, Hydrodynamics Div., Food Machinery & Chemical Corp., Englewood, N. J.
Commercial Shearing & Stamping Co., Youngstown, O.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
De Laval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Dudgeon, Inc., Richard, Brooklyn, N. Y.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eastern Industries, Inc., Hamden, Conn.
Gorman-Rupp Co., Mansfield, O.
Gray Co., Inc., Minneapolis, Minn.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.
Henderer's Sons, A. L., Wilmington, Del.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich.
Kobe Inc., Huntington Park, Calif.
LeCourtenay Co., Newark, N. J.
Ledeen Mfg. Co., El Monte, Calif.
Milton Roy Co., Philadelphia, Pa.
Myers & Bro., Co., F. E. The, Ashland, O.
Northern Ordnance Inc., Subsidiary of Northern Pump Co., Minneapolis, Minn.
Nye Tool Co., Chicago, Ill.
Owatonna Tool Co., Owatonna, Minn.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Robbins & Myers, Inc., Springfield, O.
Roper Hydraulics, Inc., Commerce, Ga.
Royalton Co., Inc., Gasport, N. Y.
Sundstrand Hydraulics, Rockford, Ill. (for mobile equipment)
Tuthill Pump Co., Chicago, Ill.
Union Pump Co., Battle Creek, Mich.
United Centrifugal Pumps, Oakland, Calif.
Viking Pump Co., Cedar Falls, Ia.
Warren Pumps, Inc., Warren, Mass.
Webster Electric Co., Racine, Wis.
Wilson Co., K. R., Arcade, N. Y.
Worthington Corp., Harrison, N. J.

PUMPS, HYDROSTATIC TEST, HAND-OPERATED

Autoclave Engineers Sales Corp., Erie, Pa.
Deming Co., Salem, O.
Dudgeon, Inc., Richard, Brooklyn, N. Y.

Gelber & Sons, Inc., S., Chicago, Ill.
Henderer's Sons, A. L., Wilmington, Del.
Pacific Pumping Co., Oakland, Calif.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.

PUMPS, JET

Advance Pump Co., Berkeley, Calif.
Barnes Mfg. Co., Mansfield, O.
Berkeley Pump Co., Berkeley, Calif.
Clayton Mark & Co., Evanston, Ill.
Decatur Pump Co., Decatur, Ill.
Deming Co., Salem, O.
Duro Co., The, Dayton, O.
Everite Pump & Mfg. Co., Lancaster, Pa.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Myers & Bro. Co., F. E., The, Ashland, O.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Red Jacket Mfg. Co., Davenport, Ia.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scot Pump Co., Thiensville, Pa.
Sta-Rite Products, Inc., Delavan, Wis.
Uniflow Mfg. Co., Erie, Pa.
Universal Mfg. Co., Berkeley, Calif.
Whitewater Pump Co., Inc., Whitewater, Wis.
Whittington Pump & Engineering Corp., Indianapolis, Ind.

PUMPS, LIQUID REFRIGERANT CIRCULATING

American-Marsh Pumps, Inc., Battle Creek, Mich.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Corley Co., Inc., The, Bounton, N. J.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Dean Hill Pump Co., Indianapolis, Ind.
Dynapump Div., Fostoria Corp., Huntingdon Valley, Pa. (canned motor)
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Heatron, Inc., York, Pa.
Ingersoll-Rand Co., New York, N. Y.
Kohlenberger Engineering Corp., Fullerton, Calif.
Lawrence Pump & Engine Co., Lawrence, Mass.
LeCourtenay Co., Newark, N. J.
Myers & Bro. Co., F. E., The, Ashland, O.
Pacific Pumping Co., Oakland, Calif.
Roper Hydraulics, Inc., Commerce, Ga.
Roth Co., Roy E., Rock Island, Ill.
Union Pump Co., Battle Creek, Mich.
Universal Mfg. Co., Berkeley, Calif.
Viking Pump Co., Cedar Falls, Ia.
Vilter Mfg. Co., Milwaukee, Wis.
Warren Pumps, Inc., Warren, Mass.
Watkins Co., J. E., Maywood, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Worthington Corp., Harrison, N. J.
York Div., Borg-Warner Corp., York, Pa.

PUMPS, PROPELLER

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Well Works, Aurora, Ill.
Berkeley Pump Co., Berkeley, Calif.
B-I-F Industries, Proportioneers Div., Providence, R. I.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Dynapump Div., Fostoria Corp., Huntingdon Valley, Pa. (canned motor)
Fairbanks, Morse & Co., Chicago, Ill.
Frederick Iron & Steel Inc., Frederick, Md.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Costa Mesa, Calif.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Lawrence Pumps, Inc., Lawrence, Mass.
Pacific Pumping Co., Oakland, Calif.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Ruthman Machinery Co., Cincinnati, O.
Universal Mfg. Co., Berkeley, Calif.
Warren Pumps, Inc., Warren, Mass.
Worthington Corp., Harrison, N. J.

PUMPS, PROPORTIONING

American Instrument Co., Inc., Silver Spring, Md.
American Meter Co., Pump Div., Philadelphia, Pa.
Bird-Archer Co., Philadelphia, Pa.
Bruner Corp., Milwaukee, Wis.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Dearborn Chemical Co., Chicago, Ill.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hills-McCanna Co., Chicago, Ill.
Lapp Insulator Co., LeRoy, N. Y.
Lawrence Pump & Engine Co., Lawrence, Mass.
Madden Corp., The, Chicago, Ill.
Marco Development Co., Inc., Wilmington, Del.
Mechanical Products Corp., Chicago, Ill.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Miller Mfg. Co., St. Paul, Minn.
Milton Roy Co., Philadelphia, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
Norcross Co., Sterling E., Bloomfield, N. J.
Pacific Pumping Co., Oakland, Calif.
Robbins & Myers, Inc., Springfield, O.
Texsteam Corp., Houston, Tex.
Tri-Rotor, Inc., Torrington, Conn.
Universal Mfg. Co., Berkeley, Calif.
Vanton Pump & Equipment Corp., Hillside, N. J.
Wallace & Tiernan Inc., Belleville, N. J.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

PUMPS, RECIPROCATING

Aldrich Pump Co., Allentown, Pa.
Allied Industries, Inc., Upper Sandusky, O.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber and Rubber lined)
American-Marsh Pumps, Inc., Battle Creek, Mich.
American Meter Co., Pump Div., Philadelphia, Pa.
Barnes Mfg. Co., Mansfield, O.
Canton Stoker Corp., Canton, O.
Champion Pneumatic Machinery Co., Princeton, Ill.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Clayton Mark & Co., Evanston, Ill.
Columbus Steam Pump Wks. Co., Columbus, O
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Dearborn Chemical Co., Chicago, Ill.
Deming Co., Salem, O.
Duro Co., Dayton, O.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Gardner-Denver Co., Quincy, Ill.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Gray Company, Inc., Minneapolis, Minn.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Layton Co., Inc., Cudahy, Wis.
Ledeen Mfg. Co., El Monte, Calif.
Leyman Mfg. Corp., McGown Pump Div., Cincinnati, O. (diaphragm type; self-priming; complete with own power source)
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milton Roy Co., Philadelphia, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
Novo Pump and Engine Co., Lansing, Mich.
Owatonna Tool Co., Owatonna, Minn. (hydraulic)
Red Jacket Mfg. Co., Davenport, Ia.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Royalton Co., Inc., Gasport, N. Y.
Uniflow Mfg. Co., Erie, Pa.
Union Pump Co., Battle Creek, Mich.
Warren Pumps, Inc., Warren, Mass.
Whitewater Pump Co., Inc., Whitewater, Wis.
Worthington Corp., Harrison, N. J.

PUMPS, REFRIGERANT TRANSFER, FOR FILLING SERVICE CYLINDERS

Belt-Ice Corp., Seattle, Wash.
Blackmer Pump Co., Grand Rapids, Mich.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Gelber & Sons, Inc., S., Chicago, Ill.
Heatron, Inc., York, Pa.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kinney Vacuum Div., New York Air Brake Co., Boston, Mass.
Kohlenberger Engineering Corp., Fullerton, Calif.
Procon Pump & Engineering Co., Oak Park, Mich.
Robbins & Myers, Inc., Springfield, O.
Roth Co., Roy E., Milan, Ill.
Viking Pump Co., Cedar Falls, Ia.

PUMPS, ROTARY

American Engineering Co., Div. of United Industrial Corp., Philadelphia, Pa.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber and rubber lined)
Beach-Russ Co., New York, N. Y.
Binks Mfg. Co., Chicago, Ill.
Blackmer Pump Co., Grand Rapids, Mich.
Chicago Pneumatic Tool Co., New York.
De Laval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eastern Industries, Inc., Hamden, Conn.
Eco Engineering Co., Newark, N. J.
Eisler Engineering Co., Inc., Newark, N. J.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Foster Pump Wks., Inc., Brooklyn, N. Y.
Gelber & Sons, Inc., S., Chicago, Ill.
Goodyear Pumps, Inc., New York, N.Y.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Granberg Corp., Subsid. of American Meter Co., Inc., Oakland, Calif.
Hauck Mfg. Co., Brooklyn, N. Y.
Jabsco Pump Co., Costa Mesa, Calif.
Kinney Vacuum Div., The New York Air Brake Co., Boston, Mass.
Kraissl Co., Inc., The, Hackensack, N. J.
Lammert & Mann Co., Chicago, Ill,
Leiman Bros., Inc., Newark, N. J.
Marco Development Co., Inc., Wilmington, Del.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Nash Engineering Co., South Norwalk, Conn.
Northern Ordnance Inc., Subsidiary of Northern Pump Co., Minneapolis, Minn.
Nyberg, Stig C., Rye, N. Y.
Oberdorfer Foundries, Inc., Syracuse, N. Y.
Procon Pump & Engineering Co., Oak Park, Mich.
Robbins & Myers, Inc., Springfield, O.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Roper Hydraulics, Inc., Commerce, Ga.
Roth Co., Roy E., Rock Island, Ill.
St. Louis Tool Co., St. Louis, Mo.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sethco Mfg. Corp., Merrick, N. Y. (with filter for acids)
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Sundstrand Hydraulics, Rockford, Ill. (for oil burners high and low pressure)
Sutorbilt Corp., Subsidiary of Fuller Co., Compton, Calif.
Taber Pump Co., Buffalo, N. Y.
Tri-Rotor, Inc., Torrington, Conn.
Tuthill Pump Co., Chicago, Ill.
Ulrich Mfg. Co., Bump Pump Div., Roanoke, Ill.
Vanton Pump and Equipment Corp., Hillside, N. J.
Viking Pump Co., Cedar Falls, Ia.
Warren Pumps, Inc., Warren, Mass.
Waukesha Foundry Co., Waukesha, Wis.
Wayne Pump Co., Div. of Symington Wayne Corp., Ft. Wayne, Ind.
Webster Electric Co., Racine, Wis. (unit pump for oil burners)
Worthington Corp., Harrison, N. J.
Yale & Towne Mfg. Co., White Plains, N. Y.

PUMPS, SEWAGE AND SLUDGE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.

American Well Works, Aurora, Ill.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes Manufacturing Co., Mansfield, O.
Berkeley Pump Co., Berkeley, Calif.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Chicago Pneumatic Tool Co., New York, N. Y.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Davidson Co., M. T., New York, N. Y.
Deming Co., Salem, O.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N.Y.
Frederick Iron & Steel Inc., Frederick, Md.
Gardner-Denver Co., Quincy, Ill.
Gelber & Sons, Inc., S., Chicago, Ill.
Goodyear Pumps, Inc., New York, N.Y.
Gorman-Rupp Co., Mansfield, O.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Costa Mesa, Calif.
Lawrence Pumps, Inc., Lawrence, Mass.
Marlow Pumps, Division of Bell & Gossett Co., Midland Park, N. J.
Novo Pump & Engine Co., Lansing, Mich.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Robbins & Myers, Inc., Springfield, O.
Swaby Mfg. Co., Chicago, Ill.
Thor Power Tool Co., Aurora, Ill.
Universal Mfg. Co., Berkeley, Calif.
Warren Pumps, Inc., Warren, Mass.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Worthington Corp., Harrison, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, SEWAGE AND SLUDGE, SUBMERSIBLE

American Well Wks., Aurora, Ill.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Berkeley Pump Co., Berkeley, Calif.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Chicago Pneumatic Tool Co., New York.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N.Y.
Ferro Corp., Cleveland, O. (Compressed air operated)
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Lawrence Pumps, Inc., Lawrence, Mass.
Pacific Pumping Co., Oakland, Calif.
Robbins & Myers, Inc., Springfield, O.
Thor Power Tool Co., Aurora, Ill.
Universal Mfg. Co., Berkeley, Calif.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., Columbus, O.
Worthington Corp., Harrison, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, STEAM

Allied Industries, Inc., Upper Sandusky, O.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Canton Stoker Corp., Canton, O.
Coffin Turbo Pump, Hydrodynamics Div., Food Machinery & Chemical Corp., Englewood, N. J.
Columbus Steam Pump Wks. Co., Columbus, O.
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Gardner-Denver Co., Quincy, Ill.
Novo Pump & Engine Co., Lansing, Mich.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Union Pump Co., Battle Creek, Mich.
Universal Mfg. Co., Berkeley, Calif.
Warren Pumps, Inc., Warren, Mass.
Worthington Corp., Harrison, N. J.

PUMPS, SUMP

Allied Industries, Inc., Upper Sandusky, O.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.
Atlas Copco Eastern, Inc., Paramus, N.J.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes Mfg. Co., Mansfield, O.
Barrett Haentjens & Co., Hazleton, Pa.
Berkeley Pump Co., Berkeley, Calif.
Bruner Corp., Milwaukee, Wis.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo, N. Y.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Carver Pump Co., Muscatine, Ia.
Chicago Pneumatic Tool Co., New York.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Clayton Mark & Co., Evanston, Ill.
Davidson Co., M. T., New York, N. Y.
Dayton Electric Mfg. Co., Chicago, Ill.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
Decatur Pump Co., Decatur, Ill.
Deming Co., Salem, O.
DeVilbiss Metal Fabricators Co., Detroit, Mich.
Duro Co., Dayton, O.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eastern Industries, Inc., Hamden, Conn.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Frederick Iron & Steel Inc., Frederick, Md.
Friermood Machine Works, Converse, Ind.
Gardner-Denver Co., Quincy, Ill.
Gelber & Sons, Inc., S., Chicago, Ill.
Goodyear Pumps, Inc., New York, N.Y.
Gorman-Rupp Co., Mansfield, O.
Goulds Pump, Inc., Seneca Falls, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Jabsco Pump Co., Costa Mesa, Calif.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Kol-Master Corp., Oregon, Ill
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Lawrence Pumps, Inc., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Layne & Bowler, Inc., Memphis, Tenn.
Marlow Pumps, Division of Bell & Gossett Co., Midland Park, N. J.
Metalmaster Corp., Newark, N. J.
Myers & Bro. Co., F. E., The, Ashland, O.
Noera Mfg. Co., Div. Chase Brass & Copper Co., Waterbury, Conn.
Pacific Pumping Co., Oakland, Calif.
Palmer Electric Co., Inc., Detroit, Mich.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Radiant Utilities Corp., Brooklyn, N. Y.
Red Jacket Mfg. Co., Davenport, Ia.
Reif-Rexoil, Inc., Buffalo, N. Y.
Remington Arms Co., Inc., Bridgeport, Conn.
Robbins & Myers, Inc., Springfield, O.
Schramm, Inc., West Chester, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scot Pump Co., Thiensville, Wis.
Sethco Mfg. Corp., Merrick, N. Y. (all plastic)
Standard Electric Mfg. Co., West Berlin, N. J.
Sta-Rite Products, Inc., Delavan, Wis.
Swaby Mfg. Co., Chicago, Ill.
Taber Pump Co., Buffalo, N. Y.
Thor Power Tool Co., Aurora, Ill.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Uniflow Mfg. Co., Erie, Pa.
Union Pump Co., Battle Creek, Mich.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Vanton Pump & Equipment Corp., Hillside, N. J.
Warren Pumps, Inc., Warren, Mass.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., The, Columbus, O.
Whitewater Pump Co., Inc., Whitewater, Wis.
Wintroath Pumps, Div. of Worthington Corp., Alhambra, Calif.
Wire Products Co., Baltimore, Md.
Worthington Corp., Harrison, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, SUMP, SUBMERSIBLE

Advance Pump Co., Berkeley, Calif.
Atlas Copco Eastern, Inc., Paramus, N.J.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes Mfg. Co., Mansfield, O.
Barrett Haentjens & Co., Hazleton, Pa.
Berkeley Pump Co., Berkeley, Calif.
Bruner Corp., Milwaukee, Wis.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., Los Angeles, Calif.
Carver Pump Co., Muscatine, Ia.
Chicago Pneumatic Tool Co., New York, N.Y.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Corcoran Co., R. S., Joliet, Ill.
Dayton Electric Mfg. Co., Chicago, Ill.
Decatur Pump Co., Decatur, Ill.
Deming Co., Salem, O.
Duro Co., The, Dayton, O.
Dynapump Div., Fostoria Corp., Huntingdon Valley, Pa. (canned motor)
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Everite Pump & Mfg. Corp., Lancaster, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N.Y.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Lawrence Pumps, Inc., Lawrence, Mass.
Layne & Bowler, Inc., Memphis, Tenn.
Little Giant Pump Div., Little Giant Corp., Oklahoma City, Okla.
Pacific Pumping Co., Oakland, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Red Jacket Mfg. Co., Davenport, Ia.
Remington Arms Co., Inc., Bridgeport, Conn.
Sethco Mfg. Corp., Merrick, N.Y. (all plastic)
Scot Pump Co., Thiensville, Wis.
Sier Bath Gear & Pump Co., Inc., North Bergen, N.J.
Sta-Rite Products, Inc., Delavan, Wis.
Uniflow Mfg. Co., Erie, Pa.
Swaby Mfg. Co., Chicago, Ill.
Thor Power Tool Co., Aurora, Ill.
Wayne Pump Co., Div. of Symington Wayne Corp., Ft. Wayne, Ind.
Weil Pump Co., Chicago, Ill.
Weinman Pump Mfg. Co., Columbus, O.
Whitewater Pump Co., Inc., Whitewater, Wis.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.
Wire Products Co., Baltimore, Md.
Worthington Corp., Harrison, N. J.

PUMPS, TURBINE TYPE

Advance Pump Co., Berkeley, Calif.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.
American Wells Works, Aurora, Ill.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Berkeley Pump Co., Berkeley, Calif.
Carver Pump Co., Muscatine, Ia.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Coffin Turbo Pump, Hydrodynamics Div., Food Machinery & Chemical Corp., Englewood, N.J.
Decatur Pump Co., Decatur, Ill.
Deming Co., Salem, O.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Federal Pump Corp., Brooklyn, N. Y.
Fiese & Firstenberger Mfg., Inc., Fresno, Calif.
General Tire & Rubber Co., Akron, O.
Ingersoll-Rand Co., New York, N. Y.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Layne & Bowler, Inc., Memphis, Tenn.
Pacific Pumping Co., Oakland, Calif.
Peerless Pump Hydrodynamics Div., Food Machinery & Chem. Corp., Los Angeles, Calif.
Roth Co., Roy E., Rock Island, Ill.

Skidmore Corp., St. Joseph, Mich.
Sta-Rite Products, Inc., Delavan, Wis.
Universal Mfg. Co., Berkeley, Calif.
Wintroath Pumps, Div. of Worthington Corp., Alhambra, Calif.
Worthington Corp., Harrison, N. J.

PUMPS, VACUUM

Airserco Mfg. Co., Pittsburgh, Pa.
Allied Industries, Inc., Upper Sandusky, O.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich
Atlas Copco Eastern, Inc., Paramus, N. J.
Barrett Haentjens & Co., Hazleton, Pa.
Beach-Russ Co., New York, N. Y.
Bury Compressor Co., Erie, Pa.
Canton Stoker Corp., Canton, O.
Chicago Pneumatic Tool Co., New York, N. Y
Croll-Reynolds Engineering Co., Inc., Stamford, Conn.
Davidson Co., M. T , New York, N. Y.
Dean Brother Pumps, Inc., Indianapolis, Ind.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Eisler Engineering Co., Inc., Newark, N. J.
Foster Pump Wks., Inc., Brooklyn, N. Y.
Foster Wheeler Corp., New York, N. Y.
Fuller Co., Catasauqua, Pa.
Gardner-Denver Co., Quincy, Ill.
Gelman Instrument Co., Chelsea, Mich.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (Chemical)
Ingersoll-Rand Co., New York, N. Y.
Joy Mfg Co Pittsburgh Pa
Kinney Vacuum Div., The New York Air Brake Co., Boston, Mass.
Kraissl Co., Inc., The, Hackensack, N. J.
Lammert & Mann Co., Chicago, Ill.
Leiman Bros., Inc., Newark, N. J.
Nash Engineering Co., South Norwalk, Conn.
Oxygen Equipment & Service Co., Chicago, Ill.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich
Pennsylvania Pump & Compressor Co., Easton, Pa.
Research Vacuum Supply Co., Chicago, Ill.
Robinair Mfg. Corp., Montpelier, O.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., Connersville, Ind.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Skidmore Corp., St Joseph, Mich.
Sutorbilt Corp., Subsidiary of Fuller Co., Compton Calif.
Union Pump Co., Battle Creek, Mich.
Viking Pump Co., Cedar Falls, Ia.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Will Corp., Rochester, N Y.
Worthington Corp., Harrison, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUMPS, VACUUM HEATING

Allied Industries, Inc., Upper Sandusky, O.
American Hydrovac, Div. Pitz Foundry, Inc., Brooklyn N Y
American-Marsh Pumps, Inc., Battle Creek, Mich
Baker, Inc., C. I., Lorain, O.
Barnes & Jones, Inc. Newtonville, Mass.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Columbus Steam Pump Wks. Co., Columbus, O.
Davidson Co., M. T., New York, N. Y.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Faber Engineering Co., Inc., Norristown, Pa.
Gardner-Denver Co., Quincy, Ill.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Nash Engineering Co., South Norwalk, Conn.
Sarco Co., Inc., New York, N. Y.
Skidmore Corp., St. Joseph, Mich.
Union Pump Co., Battle Creek, Mich.
Warren Pumps, Inc., Warren, Mass.
Whittington Pump & Engineering Corp., Indianapolis, Ind.

Worthington Corp., Harrison, N. J.

PUMPS, VISCOUS LIQUIDS AND HEAVY MATERIALS

Airmatic Valve, Inc., Cleveland, O.
Aldrich Pump Co., Allentown, Pa
Allied Industries, Inc., Upper Sandusky, O.
Allis-Chalmers Mfg Co., Milwaukee, Wis.
American-Marsh Pumps, Inc., Battle Creek, Mich.
American Meter Co., Pump Div., Philadelphia, Pa.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Beach-Russ Co., New York, N. Y.
Blackmer Pump Co., Grand Rapids, Mich.
Buffalo Pumps, Div. of Buffalo Forge Co., Buffalo N. Y.
Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Canton Stoker Corp., Canton, O.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Clark-Cooper Co., Inc., C C Pump Div., Palmyra, N. J.
Columbus Steam Pump Wks. Co., Columbus, O
Davidson Co., M. T., New York, N. Y.
Dean Brothers Pumps, Inc., Indianapolis, Ind.
De Laval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Engineer Co., New York, N. Y.
Fairbanks, Morse & Co., Chicago, Ill.
Ferro Corp., Cleveland, O. (compressed air operated)
Foster Pump Wks., Inc., Brooklyn, N. Y.
Frederick Iron & Steel Inc., Frederick, Md.
Gardner-Denver Co., Quincy Ill.
Gelber & Sons, Inc., S., Chicago, Ill.
Goodyear Pumps, Inc., New York, N. Y.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Granberg Corp., Subsid. of American Meter Co., Inc., Oakland, Calif.
Gray Co., Inc., Minneapolis, Minn.
Hetherington & Berner, Inc., Indianapolis, Ind (jacketed)
Ingersoll Rand Co., New York, N. Y.
Jabsco Pump Co., Costa Mesa, Calif.
Kingsford Foundry & Machine Wks., Oswego, N. Y.
Kinney Vacuum Div., The New York Air Brake Co., Boston, Mass.
Kraissl Co., Inc., The, Hackensack, N. J.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Lawrence Pumps, Inc., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass
Lecourtenay Co., Newark, N. J.
Madden Corp., The, Chicago, Ill.
Marco Development Co., Inc., Wilmington, Del.
Milton Roy Co., Philadelphia, Pa.
Myers & Bro. Co., F. E., The, Ashland, O.
Novo Pump & Engine Co., Lansing, Mich.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Red Jacket Mfg. Co., Davenport, Ia.
Robbins & Myers, Inc., Springfield, O.
Rockwell Co., W. S., Fairfield, Conn.
Roper Hydraulics, Inc., Commerce, Ga.
Royalton Co., Inc., Gasport, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sier Bath Gear & Pump Co., Inc., North Bergen, N. J.
Taber Pump Co., Buffalo, N. Y.
Tri-Rotor, Inc., Torrington, Conn.
Tuthill Pump Co., Chicago, Ill.
Ulrich Mfg. Co., Bump Pump Div., Roanoke, Ill.
Union Pump Co., Battle Creek, Mich.
United Centrifugal Pumps, Oakland, Calif.
Universal Mfg. Co., Berkeley, Calif.
Vanton Pump & Equipment Corp., Hillside, N. J.
Viking Pump Co., Cedar Falls, Ia.
Warren Pumps, Inc., Warren, Mass.
Wayne Pump Co., Div. of Symington Wayne Corp., Ft. Wayne, Ind.
Weinman Pump Mfg. Co., Columbus, O.
Wheeler Mfg. Co., C. H., Philadelphia, Pa.
Whittington Pump & Engineering Corp., Indianapolis, Ind.
Worthington Corp., Harrison, N. J.
Yeomans Bros. Co., Melrose Park, Ill.

PUNCHES, SHEET METAL

Billings & Spencer Co., Hartford, Conn.
Blackhawk Mfg. Co., Milwaukee, Wis.
Cleveland Punch & Shear Wks. Co., Cleveland, O.
Diamond Machine Tool Co., Pico, Calif.
Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Duro Metal Products Co., Chicago, Ill.
Excelsior Tool & Machine Co., East St. Louis, Ill.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.
Hendley & Whittemore Co., Beloit, Wis.
Kidder Mfg. Co., Inc., J. F., Burlington, Vt.
Leslie Welding Co., Inc., Franklin Park, Ill.
M-M-A, Inc., Lancaster, Pa.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Nye Tool Co., Chicago, Ill.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
Reiner & Campbell Co., Inc., Newark, N. J. (clips)
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Swaine Mfg. Co., Fred J., St. Louis, Mo.
Thor Power Tool Co., Aurora, Ill.
Thor Tool & Die Co., San Leandro, Calif.
Tool Products Corp., North Tonawanda, N.Y.
Webb Corp., The, Webb City, Mo.
Whitney Mfg. Co., W. A. Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.
Weidemann Machine Co., King of Prussia, Pa.
Zeh & Hahnemann Co., Newark, N. J.

PURGERS, REFRIGERANT GAS

Armstrong Machine Works, Three Rivers, Mich.
Frick Co., Waynesboro, Pa.
Mueller Brass Co., Port Huron, Mich.
Reco Products Div., Recony Corp., New York, N Y
Vilter Mfg. Co., Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.
Worthington Corp., Harrison, N. J.
York Div., Borg-Warner Corp., York, Pa.

PUSHERS, PIPE, HYDRAULIC

Blackhawk Mfg. Co., Milwaukee, Wis.
Dudgeon, Inc., Richard, Brooklyn, N. Y.
Giant Mfg. Co., Council Bluffs, Ia.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.
Hydraulic Mfg. Co., Bridgeport, Conn.
Mercury Hydraulics, Inc., Denver, Colo.
Wilson Co., K. R., Arcade, N. Y.

PYROMETERS

See Radiometers, Thermal, for Radiant Heat Measurements

RACKS, STORAGE, PIPE

Acme Steel Co., Chicago, Ill. (slotted angle)
Adams Co., The, Dubuque, Ia.
Beaver Advance Corp., Ellwood City, Pa.
Bernard-Franklin Co., Inc., Philadelphia, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Cady Metal Fabricating Co., North Tonawanda, N. Y.
California Steel Products Div., Richmond, Calif
Elcen Metal Products Co., Franklin Park, Ill.
Haertel Co., Walter, Minneapolis Minn
Industrial Tubular Equipment Co., Div. of Idaho Maryland Industries, Inc., North Hollywood, Calif.
Modern Hanger Corp., The, Cleveland, O.
Mult-A-Frame Corp., Detroit, Mich.
Palmer-Shile Co., Detroit, Mich.
Republic Steel Corp., Cleveland, O
Steel City Electric Co., Pittsburgh, Pa.
Tube-Strut Corp., Los Angeles, Calif.
Unistrut Products Co., Chicago, Ill.
XXth Century Heating & Ventilating Co., The, Akron, O.

RADIANT HEAT MEASUREMENT

See Radiometers

RADIANT HEAT THERMOSTATS

See Thermostats, Radiant Heat

RADIANT HEATING AND COOLING CEILINGS

See Coils and Panels, Radiant Heating, Prefabricated

RADIANT HEATING AND COOLING

See Coils and Panels, Radiant Heating, Prefabricated

RADIANT HEATING ELECTRICAL CONDUCTORS

See Panels, Electric Heating

RADIATION

Also See Surface, Finned, Heating

RADIATION, BASEBOARD, ELECTRIC HEATING ELEMENT

Acme Electric Heating Corp., Roxbury, Mass.
Ampere Industries, Newark, N. J.
Arvin Industries, Inc., Columbus, Ind.
Berko Electric Mfg. Corp., Jamaica, N. Y.
Brown Products Corp., Union, N. J.
Cavalier Corp., Electric Heating Div., Chattanooga, Tenn.
Ceilheat, Inc., Knoxville, Tenn.
Circle Air Industries, Inc., Brooklyn, N. Y.
Electriliving Corp., Indianapolis, Ind.
Electro-Ray Mfg. Co., Inc., Vancouver, Wash.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Everwarm, Inc., Knoxville, Tenn.
General Alliance Corp., San Diego, Calif.
General Electric Co., Wiring Device Dept., Electric Comfort Heating Section, Louisville, Ky.
Heatmore, Inc., Brooklyn, N. Y.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Modernheat Cable Corp., Kingsport, Tenn.
Radiation Electric Heat Co., Centerville, Ia.
Ramco Mfg. and Engineering Co., Portland, Ore.
Roberson, Inc., Seattle, Wash.
Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Spartan Electric Radiator Corp., Maspeth, N. Y.
Sundial Electric Co., Richmond Hill, N. Y.
Sunwarm, Inc., Kingsport, Tenn.
Swan Mfg. Co., Vancouver, Wash.
Tennessee Plastics, Inc., Johnson City, Tenn.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles, Calif.
Vulcan Electric Co., Danvers, Mass.
Vulcan Radiator Co., Hartford, Conn.
Wesix Electric Heater Co., San Francisco.
Wiegand Co., E. L., Pittsburgh, Pa.
Zell-Aire Corp., Reading, Pa.

RADIATION, BASEBOARD, FERROUS

American-Standard Plumbing & Heating Div., New York, N. Y.
Burnham Corp., Irvington, N. Y.
Crane Co., Chicago, Ill.
Dean Products, Inc., Brooklyn, N. Y.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Edwards Engineering Corp., Pompton Plains, N. J.
Farrell Associates, Charles, Valencia, Pa.
Fedders Corp., Heating Div., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lee Vine Fin-Tube Radiator Co., Inc., New Haven, Conn.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Rempe Co., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Sterling Radiator Co., Inc., Westfield, Mass.
Trane Co., The, La Crosse, Wis.
Tranter Mfg., Inc., Lansing, Mich.
Utica Radiator Corp., Utica, N. Y.
Vulcan Radiator Co., Hartford, Conn.
Weil-McLain Co., Michigan City, Ind.
Woodside Engineering Co., Franklin Park, Ill.

RADIATION, BASEBOARD, FITTINGS

For special fittings, see Fittings, Pipe, Special, for Baseboard Radiation

RADIATION, BASEBOARD, NON-FERROUS

American-Standard Plumbing & Heating Div., New York, N. Y.
Argo Industries, Inc., Hartford, Conn.
Ascot Gas Water Heaters, Inc., Milwaukee, Wis.
Axeman-Anderson Co., Williamsport, Pa.
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Beacon-Morris Corp., Boston, Mass.
Brown Products Corp., Union, N. J.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Continental Mfg. Co., Baltimore, Md.
Convector Corp., Washington, D. C.
Crane Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Edwards Engineering Corp., Pompton Plains, N. J.
Ejay Baseboard Mfg. Co., Winsted, Conn.
Embassy Steel Products, Inc., Brooklyn.
Farrell Associates, Charles, Valencia, Pa.
Fedders Corp., Heating Div., Trenton, N. J.
Federal Boiler Co., Inc., Midland Park, N. J.
G & O Mfg. Co., New Haven, Conn.
General Automatic Products Corp., Baltimore, Md.
General Heating Products Co., Philadelphia, Pa.
Governale Bros., Inc., Brooklyn, N. Y.
Hoff Mfg. Co., Bethany, New Haven, Conn.
Hydrotherm, Inc., Northvale, N. J.
I. W. Air Conditioning Corp., New York, N. Y.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Modine Mfg. Co., Racine, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Patco Mfg. Co., Inc., Philadelphia, Pa.
Peerless of America, Inc., Chicago, Ill.
Penn Boiler Div., Pebbco Industries, Inc., Lancaster, Pa.
Radiant-Ray Radiation, Inc., Newington, Conn.
Rempe Co., Chicago, Ill.
Republic Products Co., Philadelphia, Pa.
Rittling Corp., Buffalo, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Shaw-Perkins Mfg. Co., Pittsburgh, Pa.
Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Spartan Electric Radiator Corp., Maspeth, N. Y.
Stedco Products, Wilkes-Barre, Pa.
Sterling Radiator Co., Inc., Westfield, Mass.
Tenney Engineering, Inc., Union, N. J.
Trane Co., The, La Crosse, Wis.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Vulcan Radiator Co., Hartford, Conn.
Webster & Co., Warren, Camden, N. J.
Wescott Snyder Mfg. Corp., Madison, N. J.
Young Radiator Co., Racine, Wis.

RADIATION, CONVECTION TYPE, ELECTRIC HEATING ELEMENT

Acme Electric Heating Corp., Roxbury, Mass.
Argo Industries, Inc., Hartford, Conn.
Berko Electric Mfg. Co., Jamaica, N. Y.
Ceilheat, Inc., Knoxville, Tenn.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Electriliving Corp., Indianapolis, Ind.
Electromode Div. of Commercial Controls Corp., Rochester, N. Y.
Electro-Ray Mfg. Co., Inc., Vancouver, Wash.
Everwarm, Inc., Knoxville, Tenn.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Meier Electric, Indianapolis, Ind.
Modernheat Cable Corp., Kingsport, Tenn.
Nesbitt, Inc., John J., Philadelphia, Pa.
Spartan Electric Radiator Corp., Maspeth, N. Y.
Sundial Electric Co., Richmond Hill, N. Y.
Sunwarm, Inc., Kingsport, Tenn.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles, Calif.
Vulcan Electric Co., Danvers, Mass.
Vulcan Radiator Co., Hartford, Conn.
Wesix Electric Heater Co., San Francisco.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Zell-Aire Corp., Reading, Pa.

RADIATION, CONVECTION TYPE, FERROUS

American-Standard Plumbing & Heating Div., New York, N. Y.
Auburn Burner Co., Auburn, Ind.
Brown Products Corp., Union, N. J.
Dean Products, Inc., Brooklyn, N. Y.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Edwards Engineering Corp., Pompton Plains, N. J.
Fedders Corp., Heating Div., Trenton, N. J.
Governale Bros., Inc., Brooklyn, N. Y.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
I. W. Air Conditioning Corp., New York, N. Y.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Murray Mfg. Co., D. J., Wausau, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Rempe Co., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Shaw-Perkins Mfg. Co., Pittsburgh, Pa.
Tranter Mfg., Inc., Lansing, Mich.

RADIATION, CONVECTION TYPE, NON-FERROUS

Airtherm Mfg. Co., St. Louis, Mo.
American-Standard Plumbing & Heating Div., New York, N. Y.
Appliance Building Co., Inc., Seattle, Wash.
Argo Industries, Inc., Hartford, Conn.
Beacon-Morris Corp., Boston, Mass.
Brown Products Corp., Union, N. J.
Convector Corp., Washington, D. C.
Dunham-Bush, Inc., West Hartford, Conn.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Eastern Boiler & Electronics Corp., Manchester, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Fedders Corp., Heating Div., Trenton, N. J.
G & O Mfg. Co., New Haven, Conn.
General Heating Products Co., Philadelphia, Pa.
Governale Bros., Inc., Brooklyn, N. Y.
Heat-Exchangers, Inc., Chicago, Ill.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Hoff Mfg. Co., Bethany, New Haven, Conn.
I. W. Air Conditioning Corp., New York, N. Y.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Modine Mfg. Co., Racine, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Nesbitt Inc., John J., Philadelphia, Pa.
Pacific Steel Boiler Div., Crane Co., Johnstown, Pa.
Patco Mfg. Co., Philadelphia, Pa.
Penn Boiler Div., Pebbco Industries, Inc., Lancaster, Pa.
Republic Products Co., Philadelphia, Pa.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Shaw-Perkins Mfg Co., Pittsburgh, Pa.
Spartan Electric Radiator Corp., Maspeth, N. Y.
Tenney Engineering Inc., Union, N. J.
Trane Co., The, La Crosse, Wis.
Vapor Heating Corp., Chicago, Ill.
Webster & Co., Warren, Camden, N. J.
Wescott Snyder Mfg. Corp., Madison, N. J.
Young Radiator Co., Racine, Wis.

RADIATION, DIRECT

American-Standard Plumbing & Heating Div., New York, N. Y.
Burnham Corp., Irvington, N. Y.
Clow & Sons, Inc., James B., Chicago, Ill. (Gas fired)
Crane Co., Chicago, Ill.
Dean Products, Inc., Brooklyn, N. Y.
Dunkirk Radiator Corp., Dunkirk, N. Y.
Murray Mfg. Co., D. J., Wausau, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Rittling Corp., The, Buffalo, N. Y.
Utica Radiator Corp., Utica, N. Y.
Weil-McLain Co., Michigan City, Ind.
Wilson Engineering Corp., Chicago, Ill.

RADIATION, FIN TUBE TYPE

Alstrom Corp., New York, N. Y.
Argo Industries, Inc., Hartford, Conn.
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Brown Products Corp., Union, N. J.
Convector Corp., Washington, D. C.
Crane Co., Chicago, Ill.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.

Dunham-Bush, Inc., West Hartford, Conn.
Eastern Boiler & Electronics Corp., Manchester, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Electro-Ray Mfg. Co., Inc., Vancouver, Wash.
Fedders Corp., Heating Div., Trenton, N. J.
G & O Mfg. Co., New Haven, Conn.
General Automatic Products Corp., Baltimore, Md.
General Heating Products Co., Philadelphia, Pa.
Heat Transfer Products, Inc., Perkasie, Pa.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Hoff Mfg. Co., Bethany, New Haven, Conn.
Hydrotherm, Inc., Northvale, N. J.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lee Vine Fin-Tube Radiator Co., Inc., New Haven, Conn.
Modine Mfg. Co., Racine, Wis.
Moore Dry Kiln Co., Jacksonville, Fla.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Pacific Steel Boiler Div., Crane Co., Johnstown, Pa.
Peerless of America, Inc., Chicago, Ill.
Radiant-Ray Radiation, Inc., Newington, Conn.
Rempe Co., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Shaw-Perkins Mfg. Co., Pittsburgh, Pa.
Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Stedco Products, Wilkes-Barre, Pa.
Sterling Radiator Co., Inc., Westfield, Mass.
Super Radiator Corp., Minneapolis, Minn.
Trane Co., The, La Crosse, Wis.
Vapor Heating Corp., Chicago, Ill.
Vulcan Radiator Co., Hartford, Conn.
Webster & Co., Warren, Camden, N. J.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N.J.
Wescott Snyder Mfg. Corp., Madison, N.J.
York-Shipley, Inc., York, Pa.

RADIATOR AND CONVECTOR HUMIDIFIERS

See Humidifiers for Radiators and Convectors

RADIATOR HANGERS

See Hangers or Brackets, Radiation

RADIATOR ORIFICES

See Orifices, Radiator

RADIATOR ORIFICE VALVES

See Valves, Radiator, Orifice

RADIATOR VALVES

See Valves, Radiator

RADIATOR VENT VALVE HUMIDIFIERS

See Humidifiers, Radiator Vent Valve

RADIATORS, ELECTRIC

Acme Electric Heating Corp., Roxbury, Mass.
Burnham Corp., Irvington, N. Y. (portable steam)
I. W. Air Conditioning Corp., New York, N. Y.
Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Spartan Electric Radiator Corp., Maspeth, N. Y.
Vulcan Radiator Co., Hartford, Conn.

RADIATORS, GAS FIRED

Bettcher Mfg. Corp., The, Cleveland, O.
Fedders Corp., Heating Div., Trenton, N. J.

RADIATORS, HUMIDIFYING

Murray Mfg. Co., D. J., Wausau, Wis.

RADIOACTIVE ISOTOPES FOR DETECTING LEAKS IN PIPING AND HEATING SYSTEMS

See Isotopes, Radioactive

RADIOGRAPHIC INSPECTION

See Equipment, Radiographic Inspection

RADIOMETERS, THERMAL, FOR RADIANT HEAT MEASUREMENTS

Atkins Technical, Inc., Cleveland, O.
Bailey Meter Co., Cleveland, O.
Beckman & Whitley, Inc., San Carlos, Calif.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.

RAMS, WATER, FOR CLEANING OUT PIPE LINES

Hydraulic Mfg. Co., Bridgeport, Conn.

RATCHET WRENCHES

See Wrenches, Ratchet

REAMERS, PIPE

American Pipe Tool Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O.
Chicago Specialty Mfg. Co., Chicago, Ill.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Mueller Co., Decatur, Ill.
Nye Tool Co., Chicago, Ill.
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Sac Tool Mfg. Co., St. Louis, Mo.
Thor Power Tool Co., Aurora, Ill.
Toledo Pipe Threading Machine Co., Toledo, O.

RECEIVERS, REFRIGERANT, LIQUID

Acme Industries, Inc., Jackson, Mich.
Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Dunham-Bush, Inc., West Hartford, Conn.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Killebrew Engineering Corp., St. Louis, Mo.
Lehigh Mfg. Co., Div. of Lehigh, Inc., Easton, Pa.
Refrigeration Research, Inc., Brighton, Mich.
Remco, Inc., Zelienople, Pa.
Standard Refrigeration Co., Chicago, Ill.
Tube Manifold Corp., North Tonawanda, N. Y.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Worthington Corp., Harrison, N. J.
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.

RECIPROCATING PUMPS

See Pumps, Reciprocating

RECORDER-CONTROLLERS, COMBINED TEMPERATURE AND HUMIDITY

American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Foxboro Co., Foxboro, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Partlow Corp., The, New Hartford, N. Y.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Weksler Instruments Corp., Freeport, L. I., N. Y.

RECORDER-CONTROLLERS, HUMIDITY

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Evanston, Ill.
Johnson Service Co., Milwaukee, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Universal Dynamics Corp., Arlington, Va.
Weksler Instruments Corp., Freeport, L. I., N. Y.

RECORDER-CONTROLLERS, PRESSURE

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American Meter Co., Inc., Philadelphia, Pa.
Automatic Control Co., St. Paul, Minn.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
B-I-F Industries, Builders-Providence Div., Providence, R.I.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Daytronic Corp., Dayton, O.
Defender Instrument and Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Evanston, Ill.
General Controls Co., Glendale, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Leeds & Northrup Co., Philadelphia, Pa.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Power Regulator Co., Skokie, Ill.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I.

RECORDER-CONTROLLERS, TEMPERATURE

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American Instrument Co., Inc., Silver Spring, Md.
American Meter Co., Inc., Philadelphia, Pa.
Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Defender Instrument and Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Evanston, Ill.
General Controls Co., Glendale, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Partlow Corp., The, New Hartford, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.

Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Taylor Instrument Companies, Rochester, N. Y.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Thwing-Albert Instrument Co., Philadelphia.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I.
West Instrument Corp., Chicago, Ill.

RECORDER-TOTALIZERS, TIME, FOR HEATING SYSTEMS

Air Conditioning Equipment Corp., New York. N. Y.
Au-Temp Co Corp., New York, N. Y.
Bristol Co., The, Waterbury, Conn.
Cramer Controls Corp., Centerbrook, Conn.
Gorrell & Gorrell, Westwood, N.J.
Haydon Co., A. W., The, Waterbury, Conn.
Heat Timer Corp., New York, N. Y.
Hobbs Div., Stewart-Warner Corp., Springfield, Ill.
Standard Instrument Div., Heat Timer Corp., New York, N. Y.

RECORDERS, CARBON DIOXIDE

Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., Newark, N. J.
Defender Instrument and Regulator Co., Boody, Ill.
Fischer & Porter Co., Warminster, Pa.
Hays Corp., Michigan City, Ind.
Leeds & Northrup Co., Philadelphia, Pa.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.
Victory Engineering Corp., Union, N. J.

RECORDERS, COMBINED TEMPERATURE AND HUMIDITY

Abbeon Supply Co., Jamaica, N. Y.
Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Corp., Baltimore, Md.
Garden City Instruments, Inc., Evanston, Ill.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Leeds & Northrup Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Palmer Thermometers, Inc., Cincinnati, O.
Partlow Corp., The, New Hartford, N. Y.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Universal Instruments Co., Brentwood, Md.
Weksler Instruments Corp., Freeport, L. I., N. Y.

RECORDERS, DEW POINT

American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Cargocaire Engineering Corp., New York, N. Y.
Foxboro Co., Foxboro, Mass.
Mine Safety Appliances Co., Pittsburgh, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Surface Combustion Corp., Toledo, O.
Weighing & Controls, Inc., Hatboro, Pa.

RECORDERS, DRAFT

Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Defender Instrument and Regulator Co., Boody, Ill.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Moore Products Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Uehling Instrument Co., Paterson, N. J.
Victory Engineering Corp., Union, N. J.

RECORDERS, HUMIDITY

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American Instrument Co., Inc., Silver Spring, Md.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Corp., Baltimore, Md.
Garden City Instruments, Inc., Evanston, Ill.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Leeds & Northrup Co., Philadelphia, Pa.
Mine Safety Appliances Co., Pittsburgh, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Universal Dynamics Corp., Arlington, Va.
Universal Instruments Co., Brentwood, Md.
Weksler Instruments Corp., Freeport, L. I.

RECORDERS, LIQUID LEVEL

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American Meter Co., Inc., Philadelphia, Pa.
Automatic Control Co., St. Paul, Minn.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
B-I-F Industries, Builders-Providence Div., Providence, R.I.
Bristol Co., The, Waterbury, Conn.
Defender Instrument & Regulator Co., Boody, Ill.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Leeds & Northrup Co., Philadelphia, Pa.
Liquidometer Corp., Long Island City, N. Y.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Simplex Valve & Meter Co., Lancaster, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Texas Instruments, Inc., Houston, Tex.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Trerice Co., H. O., Detroit, Mich.
Uehling Instrument Co., Paterson, N. J.
Westinghouse Electric Corp., Pittsburgh, Pa.
Yarnall-Waring Co., Philadelphia, Pa.

RECORDERS, OXYGEN

Bailey Meter Co., Cleveland, O.
Barton Instrument Corp., Monterey Park, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Leeds & Northrup Co., Philadelphia, Pa.
Mine Safety Appliances Co., Pittsburgh, Pa.
Victory Engineering Corp., Union, N. J.

RECORDERS, PRESSURE AND VACUUM

American Meter Co., Inc., Philadelphia, Pa.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Crosby Valve & Gage Co., Wrentham, Mass.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Daytronic Corp., Dayton, O.
Defender Instrument & Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Electric Autolite Co., Toledo, O.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Garden City Instruments, Inc., Evanston, Ill.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hastings-Raydist, Inc., Hampton, Va.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Leeds & Northrup Co., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Uehling Instrument Co., Paterson, N. J.
United States Gauge Div. of American Machine and Metals Inc., Sellersville, Pa.
Weksler Instruments Corp., Freeport, L. I., N. Y.

RECORDERS, SMOKE DENSITY

Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia Pa.
De-Tec-Tronic Corp., Chicago, Ill.
Edwards, L. V., Rockville Center, N. Y.
Electronics Corp. of America, Cambridge, Mass.
Gelman Instrument Co., Chelsea, Mich.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hays Corp., The, Michigan City, Ind.
Leeds & Northrup Co., Philadelphia, Pa.
Photomation, Inc., Bergenfield, N. J.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.

RECORDERS, TEMPERATURE

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
American Instrument Co., Inc., Silver Spring, Md.
American Meter Co., Inc., Philadelphia, Pa.
B-I-F Industries, Builders-Providence Div., Providence, R.I.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Defender Instrument & Regulator Co., Boody, Ill.
Dickson Co., The, Chicago, Ill.
Electric Autolite Co., Toledo, O.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Corp., Baltimore, Md.
G. M. Mfg. Co., New York, N. Y.
Garden City Instruments, Inc., Evanston, Ill.
Gelman Instrument Co., Chelsea, Mich.
General Controls Co., Glendale, Calif.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Green Instruments, Inc., Henry J., Westbury, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.

Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Moore Products Co., Philadelphia, Pa.
Palmer Thermometers, Inc., Cincinnati (Norwood), O. (Mercury-actuated)
Partlow Corp., The, New Hartford, N. Y.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Scientific Instrument Co., Detroit, Mich.
Serdex, Inc., Boston, Mass.
Taylor Instrument Companies, Rochester, N. Y.
Thermo Electric Co., Inc., Saddle Brook, N. Y.
Thwing-Albert Instrument Co., Philadelphia, Pa.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals Inc., Sellersville, Pa.
Universal Instruments Co., Brentwood, Md.
Victory Engineering Corp., Union, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.
West Instrument Corp., Chicago, Ill.
Westronics, Inc., Fort Worth, Tex.
Yellow Springs Instrument Co., Inc., Yellow Springs, O.

RECORDING THERMOMETERS

See Recorders, Temperature

RECOVERY EQUIPMENT, AIR

See Adsorbers, Odor, for Duct Systems

RECOVERY UNITS, HEAT, AIR TO AIR

See Units, Heat Recovery, Air to Air

REDUCERS AND INCREASERS, SPEED

Abart Gear & Machine Co., Chicago, Ill.
Adams Co., The, Dubuque, Iowa
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Pulley Co., Div. Van Norman Industries, Inc., Philadelphia, Pa.
Bodine Electric Co., Chicago, Ill.
Boston Gear Wks., Quincy, Mass.
Brown-Brockmeyer Co., Inc., Dayton, O.
Chicago Die Casting Mfg. Co., Chicago, Ill.
Cleveland Worm & Gear Div., Eaton Mfg. Co., Cleveland, O.
De Laval Steam Turbine Co., Trenton, N. J.
Dodge Mfg. Corp., Mishawaka, Ind.
Falk Corp., Milwaukee, Wis.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Graham Transmissions, Inc., Menomonee Falls, Wis.
Hewitt-Robins, Inc., Stamford, Conn.
Janette Mfg. Co., Morton Grove, Ill.
Jones Machinery Div., Hewitt-Robins, Inc., Chicago, Ill.
Lima Electric Motor Co., Inc., The, Lima, O.
Link Belt Co., Chicago, Ill. (herringbone, worm gear)
Master Electric Co., Div. of Reliance Electric & Engineering Co., Dayton, O.
Morse Chain Co., Ithaca, N. Y.
Philadelphia Gear Corp., King of Prussia, Pa.
Poole Foundry & Machine Co., Baltimore, Md.
Reliance Electric & Engineering Co., Cleveland, O.
Steam Turbine Div., Worthington Corp., Wellsville, N. Y.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.
Terry Steam Turbine Co., The, Hartford, Conn.
U. S. Electrical Motors, Inc., Los Angeles, Calif.
Westinghouse Electric Corp., Pittsburgh, Pa.
Worthington Corp., Harrison, N. J.

REFRACTORIES AND REFRACTORY CEMENT

Allen Co., Robert G., Mechanicsville, N. Y.
Armstrong Cork Co., Lancaster, Pa.
Babcock & Wilcox Co., Boiler Div., Barberton, O.
Basic Inc., Cleveland, O.
Bigelow Liptak Corp., Detroit, Mich.
Botfield Refractories Co., Philadelphia, Pa.
Carey Mfg. Co., Philip, Cincinnati, O.
Dixon Crucible Co., Joseph, Jersey City, N. J.
France Refractories, Co., J. H., Snow Shoe, Pa.
Green Fire Brick Co., Mexico, Mo.
Johns-Manville Corp., New York, N. Y.
Nebel Mfg. Co., Cleveland, O.
Norton Co. Worcester, Mass
Pittsburgh Corning Corp., Pittsburgh, Pa.
Plibrico Co., Chicago, Ill.
Preferred Utilities Mfg. Corp., New York, N. Y.
Pyrolite Products Co., Cleveland, O.
Quigley Co., Inc., New York, N. Y.
Ramtite Co., The, Chicago, Ill.
Refractory & Insulation Corp., New York, N. Y.
Reintjes Co., Geo. P., Kansas City, Mo.
Rex Clay Products Co., Walled Lake, Mich.
Robinson Clay Product Co., The, Akron, O.
Rutland Fire Clay Co., Rutland, Vt.
Sauereisen Cements Co., Pittsburgh, Pa.
Saverite Engineering Co., Hoboken, N. J.
Shenango Refractories, New Castle, Pa.
Standard Fuel Engineering Co., Detroit, Mich.
Taylor Sons Co., Charles, Cincinnati, O.
Zonolite Co., Chicago, Ill.

REFRIGERANT DEHYDRATORS

See Dehydrators, Refrigerant

REFRIGERANT FILTERS

See Filters, Refrigerant

REFRIGERANT GAGE SETS

See Gage Sets, Refrigeration

REFRIGERANT GAS PURGERS

See Purgers, Refrigerant Gas

REFRIGERANT SLUG ELIMINATORS

See Eliminators, Slug, Refrigerant

REFRIGERANT TRANSFER SYSTEMS

See Pumps, Refrigerant Transfer

REFRIGERANTS

American Potash & Chemical Corp., Refrigeration Dept., Los Angeles, Calif. (Refrigerants 11, 12, 22, 113, 114, sulphur dioxide methyl chloride)
Ansul Chemical Co., Refrigeration Div., Marinette, Wis. (methyl, chloride, sulphur dioxide)
Armour Industrial Chemical Co., Div. of Armour & Co., Chicago, Ill. (Anhydrous ammonia)
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y. (carrene)
Dow Chemical Co., The, Midland, Mich.
du Pont de Nemours & Co., Inc., E. I., Electrochemicals Dept., Wilmington, Del. (Methyl chloride and methylene chloride)
du Pont de Nemours & Co., Inc., E. I., Freon Products Div., Wilmington, Del. (fluorinated hydrocarbon refrigerants)
General Chemical Div., Allied Chemical Corp., New York, N. Y. (R-12 Dichlorodifluoromethane, R-114A Dichlorotetrafluoroethane, R-22 Monochlorodifluoromethane, R-11 Trichloromonofluoromethane, R-113 Trichlorotrifluoroethane)
General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill. (carbon dioxide)
Monsanto Chemical Co., St. Louis, Mo. (anhydrous ammonia)
Pennsalt Chemicals Corp., Philadelphia, Pa. (ammonia, fluorinated hydrocarbons) (packaged refrigerants)
Pennsylvania Engrg. Co., Philadelphia, Pa.
Pure Carbonic Co., Div. of Air Reduction Co., Inc., New York, N. Y. (carbon dioxide)
Solvay Process Div., Allied Chemical Corp., New York, N.Y. (calcium chloride)
Sun Oil Co., Philadelphia, Pa. (Anhydrous ammonia)
Texaco, Inc., New York, N. Y. (ammonia)
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y. (fluorocarbons; glycols)
Virginia Smelting Co., West Norfolk, Va., (Methyl chloride, liquid sulphur dioxide.)

REFRIGERATING COMPRESSORS

See Compressors, Refrigerating

REFRIGERATION ACCUMULATORS

See Accumulators, Refrigeration

REFRIGERATION CHASSIS

See Unitary Air Conditioners, Summer

REFRIGERATION CONTROLS

See Valves, Refrigeration

REFRIGERATION FITTINGS

See Fittings, Refrigeration

REFRIGERATION MANIFOLDS

See Manifolds, Refrigeration

REFRIGERATION VALVES

See Valves, Refrigeration

REGISTERS

See also Diffusers; Grilles; Panels, Perforated, for Air Diffusion

A. & A. Register Co., Cleveland, O.
A-J Mfg. Co., Kansas City, Mo.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Air Distribution Products Co., Los Angeles.
Air-Factors, Inc., Covina, Calif.
AirGuide Plastics Corp., Miami, Fla. (molded nylon)
Auer Register Co., Cleveland, O.
Austin Engineering & Mfg. Co., Inc., Ysleta, Tex.
Barber-Colman Co., Rockford, Ill.
Carnes Corp., Verona, Wis.
Char-Gale Mfg. Co., Minneapolis, Minn.
Connor Engineering Corp., Danbury, Conn.
Controlair Mfg. Co., Los Angeles, Calif.
Corbman Bros., Inc., Philadelphia, Pa.
Diamond Mfg. Co., Wyoming, Pa.
Dole Valve Co., The, Morton Grove, Ill. (Automatic register)
Empire Ventilation Equipment Co., Long Island City, N. Y.
General Air Products Corp., Cedar Grove, N. J.
Harrington & King Perforating Co., Inc., Chicago, Ill.
Hart & Cooley Mfg. Co., Holland, Mich.
Hastings Air Control, Inc., Omaha, Nebr.
Hendrick Mfg. Co., Carbondale, Pa.
Independent Register Co., Cleveland, O.
International Mfg. Co., Oklahoma City, Okla.
Krueger Air Conditioning Co., Tucson, Ariz.
Lenly Mfg. Co., Inc., Los Angeles, Calif.
Lima Register Co., The, Lima, O.
Maurlee Co., Inc., Woodbury Heights, N. J.
Metal Industries, Inc., Clearwater, Fla.
Midco Register Corp., St. Paul, Minn.
Register & Grille Mfg. Co., Inc., Brooklyn.
Rhoads Engineering Corp., Culver City, Calif.
Rock Island Register Co., Rock Island, Ill.
Smith Co., J. B., Philadelphia, Pa.
Standard Stamping & Perforating Co., Chicago, Ill.
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
United States Register Co., Battle Creek, Mich.
Universal Diffuser Corp., Tuckahoe, N. Y.
Viking Mfg. Corp., Cleveland, O.
Waterloo Register Co., Inc., Waterloo, Ia.
Young Regulator Co., Cleveland, O.

REGISTER UNITS, FOR SECONDARY AIR SUPPLY FOR OIL BURNERS

Engineer Co., New York, N. Y.
Faber Engineering Co., Inc., Norristown, Pa.
National Airoil Burner Co., Inc., Philadelphia, Pa.

REGULATORS, AIR VELOCITY

Barber-Colman Co., Rockford, Ill.
Cleveland Controls, Inc., Cleveland, O.
Coen Controls Co., Inc., San Francisco, Calif.

Hastings-Raydist, Inc., Hampton, Va.
Hays Corp., Michigan City, Ind.
Johnson Service Co., Milwaukee, Wis.
Taylor Instrument Companies, Rochester, N. Y.
Trane Co., The, La Crosse, Wis.

REGULATORS, DAMPER SETS

Acme Mfg. Co., Philadelphia, Pa.
Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Adams Co., The, Dubuque, Ia.
Air Conditioning Products Co., Detroit, Mich.
Ashcraft Co., J. P., Dallas, Tex.
Atlas Valve Co., Newark, N. J.
Barber-Colman Co., Rockford, Ill.
Cleveland Controls, Inc., Cleveland, O.
Coen Controls Co., Inc., San Francisco, Calif.
Crown Controls Co., Inc., New Bremen, O.
Defender Instrument & Regulator Co., Boody, Ill.
Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Elgen Mfg. Co., Long Island City, N. Y.
Ellison Draft Gage Co., Chicago, Ill.
Foster Wheeler Corp., New York, N. Y.
General Controls Co., Glendale, Calif. and Skokie, Ill. (electric)
Gerett Corp., M. A., Milwaukee, Wis.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hart & Cooley Mfg. Co., Holland, Mich.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Mirror Patented Stove Pipe Co., Hartford, Conn.
RINCO, Altadena, Calif.
Sarcotherm Controls, Inc., New York, N. Y.
United States Register Co., Battle Creek, Mich.
Ventfabrics, Inc., Chicago, Ill.
Wa-Trol, Houston, Tex.
Young Regulator Co., Cleveland, O.

REGULATORS, DRAFT, COMBUSTION

Bailey Meter Co., Cleveland, O.
Bressler Engineering Service, Oregon, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Canton Stoker Corp., Canton, O.
Cash Co., A. W., Decatur, Ill.
Cleveland Controls, Inc., Cleveland, O.
Coen Controls Co., Inc., San Francisco, Calif.
Cole-Sewell Engineering Co., St. Paul, Minn.
Combustion Equipment Co., Moline, Ill.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Defender Instrument and Regulator Co., Boody, Ill.
Electronics Corp. of America, Cambridge, Mass.
Ellis Draft Gage Co., Chicago, Ill.
Field Control Div., Conco Engineering Works, Inc., Mendota, Ill.
Foxboro Co., Foxboro, Mass.
Fuelguard Co., Dallas, Tex.
GPE Controls, Inc., Chicago, Ill.
General Controls Co., Glendale, Calif.
Hays Corp., The, Michigan City, Ind.
Kol-Master Corp., Oregon, Ill.
Leahy Mfg. Co., Los Angeles, Calif.
Locke Regulator Co., Salem, Mass.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Mirror Patented Stove Pipe Co., Hartford, Conn.
Photomation, Inc., Bergenfield, N. J.
Preferred Utilities Mfg. Corp., New York, N. Y.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill. (Industrial)
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarcotherm Controls, Inc., New York, N. Y.
Shallcross Controls, Inc., Markesan, Wis.
Simplex Mfg. Co., Fond du Lac, Wis.
Spence Engineering Co., Inc., Walden, N. Y.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Steinen Mfg. Co., Wm., Newark, N. J.
Walker Mfg. & Sales Co., St. Joseph, Mo.
Whitty Co., Inc., Boston, Mass.
Windmaster Div. of Lima Register Co., Lima, O.
Worner Electronic Devices, Rankin, Ill.

REGULATORS, FLUID FLOW, FOR CONSTANT VOLUME

Independent of Pressure

Bailey Co., Chas. M., San Francisco, Calif.
Binks Mfg. Co., Chicago, Ill.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Brooks Instrument Co., Inc., Hatfield, Pa.
Cla-Val Co., Newport Beach, Calif.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Dole Valve Co., The, Morton Grove, Ill.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
GPE Controls, Inc., Chicago, Ill.
Hays Corp., Michigan City, Ind.
Hays Mfg. Co., Erie, Pa.
Henszey Co., Watertown, Wis.
Kates Co., W. A., The, Deerfield, Ill.
Klipfel Valves, Inc., Hamilton, O.
McDonnell & Miller, Inc., Chicago, Ill.
Taco Heaters, Inc., Cranston, R. I.

REGULATORS, LEVEL, LIQUID

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
Alco Valve Co., St. Louis, Mo.
Allen-Bradley Co., Milwaukee, Wis.
Associated Valve Co., North Wales, Pa.
Automatic Control Co., St. Paul, Minn.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Burrows Mfg. Co., F. A., York, Pa.
Cla-Val Co., Newport Beach, Calif.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Cutler-Hammer, Inc., Milwaukee, Wis.
Davis Regulator Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Dietz Co., Inc., Henry G., Long Island City, N. Y.
Fischer & Porter Co., Warminster, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
GPE Controls, Inc., Chicago, Ill.
General Controls Co., Glendale, Calif.
Golden-Anderson Valve Specialty Co., Pittsburgh, Pa.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Healy Ruff Co., St. Paul, Minn.
Henszey Co., Watertown, Wis.
Instruments, Inc., Tulsa, Okla.
Johnson Corp., The, Three Rivers, Mich.
Johnson Service Co., Milwaukee, Wis.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Magnetrol, Inc., Chicago, Ill.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Newark Controls Co., Bloomfield, N. J.
OPW-Jordan Corp., Cincinnati, O.
Penn Controls, Inc., Goshen, Ind.
Petrometer Corp., Long Island City, N. Y.
Phillips & Co., H. A., Chicago, Ill.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarco Co., Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Spence Engineering Co., Inc., Walden, N. Y.
Sporlan Valve Co., St. Louis, Mo.
Stickle Steam Specialties Co., Indianapolis, Ind.
Taylor Instrument Companies, Rochester, N. Y.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
United Electric Controls Co., Watertown, Mass.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.

REGULATORS, PRESSURE, AIR

Allen-Bradley Co., Milwaukee, Wis.
American Flow Control Corp., Houston, Tex.
American Meter Co., Inc., Philadelphia, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Barber-Colman Co., Rockford, Ill.
Binks Mfg. Co., Chicago, Ill.
Black Mfg. Co., Div. of Alexander Milburn, Inc., Baltimore, Md.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia.
Burrows Mfg. Co., F. A., York, Pa.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Clark Mfg. Co., Cleveland, O.
Coen Controls Co., Inc., San Francisco, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Davis Regulator Co., Chicago, Ill.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
DeVilbiss Co., The, Toledo, O.
Dockson Corp., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fischer & Porter Co., Warminster, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
GPE Controls, Inc., Chicago, Ill.
Gardner-Denver Co., Quincy, Ill.
Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
General Controls Co., Glendale, Calif.
Gray Co., Inc., Minneapolis, Minn.
Grove Valve and Regulator Co., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hanna Engineering Wks., Chicago, Ill.
Hannifin Co., A Div. of Parker-Hannifin Corp., DesPlaines, Ill.
Hays Corp., Michigan City, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis.
Hubbell Corp., Mundelein, Ill.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jarett Compressor and Equipment, Inc., Newark, N.J.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Lexington Controls, Inc., Burlington, Mass.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Nielan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Modern Engineering Co., St. Louis, Mo.
Moore Products Co., Philadelphia, Pa.
Mueller Co., Decatur, Ill.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Newark Controls Co., Bloomfield, N. J.
Nielsen, Inc., E. V., Stamford, Conn.
Norgren Co., C. A., Englewood, Colo.
OPW-Jordan Corp., Cincinnati, O.
Penn Controls, Inc., Goshen, Ind.
Perfecting Service Co., Charlotte, N. C.
Powers Regulating Co., Skokie, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.

Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sall Bros. Co., Rockford, Ill.
Schade Valve Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Shallcross Controls, Inc., Markesan, Wis.
Smith Welding Equipment Corp., Minneapolis, Minn.
Spence Engineering Co., Inc., Walden, N. Y.
Spray Engineering Co., Burlington, Mass.
Squires Co., C. E., The, Cleveland, O.
Strong, Carlisle & Hammond, Conneaut, O.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
United Electric Controls Co., Watertown, Mass.
Universal Controls Corp., Dallas, Tex.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Warren Engineering Co., Broadway, N. J.
Water Cooling Corp., New York, N. Y.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Young Regulator Co., Cleveland, O.

REGULATORS, PRESSURE, GAS

Allen-Bradley Co., Milwaukee, Wis.
American Flow Control Corp., Houston, Tex.
American Meter Co., Inc., Philadelphia, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Black Mfg. Co., Div. of Alexander Milburn, Inc., Baltimore, Md.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cam-Stat, Inc., Div. of the Paul Henry Co., Los Angeles, Calif.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Clark Mfg. Co., Cleveland, O.
Coen Controls Co., Inc., San Francisco, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Davis Regulator Co., Chicago, Ill.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Deutsch Controls Corp., Los Angeles, Calif.
Dockson Corp., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fischer & Porter Co., Warminster, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
GPE Controls, Inc., Chicago, Ill.
Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.
Grove Valve and Regulator Co., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa
Harris Calorific Co., The, Cleveland, O.
Hays Corp., Michigan City, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Hubbell Corp., Mundelein, Ill.
K-G Equipment Co., Allentown, Pa.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Major Controls, Corona, Calif.
Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Maxitrol Co., Southfield, Mich.
McAlear Mfg. Co., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Modern Engineering Co., St. Louis, Mo.
Moore Products Co., Philadelphia, Pa.
Mueller Co., Decatur, Ill.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Newark Controls Co., Bloomfield, N.J.
Norgren Co., C. A., Englewood, Colo.
North American Mfg. Co., Cleveland, O.
OPW-Jordan Corp., Cincinnati, O.
Penn Controls, Inc., Goshen, Ind.
Pure Carbonic Co., Div. of Air Reduction Co., Inc., New York, N. Y. (carbon dioxide)
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill. (Industrial)
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Schade Valve Mfg. Co., Philadelpha, Pa.
Scientific Instrument Co., Detroit, Mich.
Shallcross Controls, Inc., Markesan, Wis.
Smith Welding Equipment Corp., Minneapolis, Minn.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Strong, Carlisle & Hammond, Conneaut, O.
Taylor Instrument Companies, Rochester, N. Y.
Thermac Co., Corona, Calif.
Trerice Co., H. O., Detroit, Mich.
United Electric Controls Co., Watertown, Mass.
Universal Controls Corp., Dallas, Tex.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Weldit, Inc., Detroit, Mich.

REGULATORS, PRESSURE, HOT WATER HEATING SYSTEMS

Bailey Co., Chas. M., San Francisco, Calif.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Bell & Gossett Co., Morton Grove, Ill.
Boylston Steam Specialty Co., Chicago, Ill.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Burrows Mfg. Co., F. A., York, Pa.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Clark Mfg. Co., Cleveland, O.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Fisher Governor Co., Marshalltown, Ia.
Hays Corp., The, Michigan City, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Keckley Co., O. C., Skokie, Ill.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
McAlear Mfg. Co., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Mueller Co., Decatur, Ill.
Norgren Co., C. A., Englewood, Colo.
OPW-Jordan Corp., Cincinnati, O.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Sall Bros. Co., Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Scientific Instrument Co., Detroit, Mich.
Squires Co., C. E., The, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, LaCrosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.
White-Rodgers Co., St. Louis, Mo.

REGULATORS, PRESSURE, LIQUID

Allen-Bradley Co., Milwaukee, Wis.
American Flow Control Corp., Houston, Tex.
Atlas Valve Co., Newark, N. J.
Automatic Control Co., St. Paul, Minn.
Bailey Co., Chas. M., San Francisco, Calif.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Binks Mfg. Co., Chicago, Ill.
Black Mfg. Co., Div. of Alexander Milburn, Inc., Baltimore, Md.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Clark Controller Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Cutler-Hammer, Inc., Milwaukee, Wis.
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Eddington Metal Specialty Co., Eddington, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
GPE Controls, Inc., Chicago, Ill.
Golden-Anderson Valve Specialty Co., Pittsburgh, Pa.
Gray Co., Inc., Minneapolis, Minn.
Grove Valve and Regulator Co., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Healy Ruff Co., St. Paul, Minn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Hubbell Corp., Mundelein, Ill.
Johnson Service Co., Milwaukee, Wis.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Monarch Mfg. Wks., Inc., Philadelphia, Pa.
Mueller Co., Decatur, Ill.
Myers & Bro. Co., F. E., The, Ashland, O.
Newark Controls Co., Bloomfield, N. J.
Norgren Co., C. A., Englewood, Colo.
OPW-Jordan Corp., Cincinnati, O.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill. (industrial)
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Schade Valve Mfg. Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Strong, Carlisle & Hammond, Conneaut, O.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
United Electric Controls Co., Watertown, Mass.
Warren Engineering Co., Broadway, N. J.
Water Cooling Corp., New York, N. Y.
Watkins Co., J. E., Maywood, Ill.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
White-Rodgers Co., St. Louis, Mo.
Wilkins Regulator Co., Los Angeles, Calif. (hot and cold water)

REGULATOR, STATIC PRESSURE, AIR DUCT

Bailey Co., Chas. M., San Francisco, Calif.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cash Co., A. W., Decatur, Ill.
Coen Controls Co., Inc., San Francisco, Calif.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Dietz Co., Inc., Henry G., Long Island City, N. Y.
General Controls Co., Glendale, Calif.
Hays Corp., Michigan City, Ind.
Johnson Service Co., Milwaukee, Wis.

Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Shallcross Controls, Inc., Markesan, Wis.

REGULATORS, TEMPERATURE

Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
Aerco Corp., Northvale, N. J.
Allen-Bradley Co., Milwaukee, Wis.
American Instrument Co., Inc., Silver Spring, Md.
American-Standard Controls Div., Detroit, Mich.
Assembly Products, Inc., Chesterland, O.
Atlas Valve Co., Newark, N. J.
Au-Temp-Co Corp., New York, N. Y.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Barber-Colman Co., Rockford, Ill.
Bell & Gossett Co., Morton Grove, Ill.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Burling Instrument Co., Air Conditioning Div., Chatham, N. J.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Century Instrument Co., Detroit, Mich.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Crown Controls Co., Inc., New Bremen, O.
Cutler-Hammer, Inc., Milwaukee, Wis.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fenwal Inc., Ashland, Mass.
Fischer & Porter Co., Warminster, Pa.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Appliance Control Dept., Morrison, Ill.
H-B Instrument Co., Philadelphia, Pa.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Heat-Timer Corp., New York, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis.
Johnson Service Co., Milwaukee, Wis.
Keckley Co., O. C., Skokie, Ill.
Klipfel Valves, Inc., Hamilton, O.
Lawler Automatic Controls, Inc., Mount Vernon, N. Y.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
McAlear Mfg. Co., Chicago, Ill.
McCorkle Co., D. H., Berkeley, Calif.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
OPW-Jordan Corp., Cincinnati, O.
Partlow Corp., The, New Hartford, N. Y.
Penn Controls, Inc., Goshen, Ind.
Philadelphia Thermometer Co., Philadelphia.
Powers Regulator Co., Skokie, Ill.
Ranco Incorporated, Columbus, O.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Scientific Instrument Co., Detroit, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E. The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Taylor Instrument Companies, Rochester, N. Y.
Texas Instruments Inc., Metals & Controls Div., Attleboro, Mass.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
United Electric Controls Co., Watertown, Mass.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
West Instrument Corp., Chicago, Ill.
Wheelco Instruments Co., Chicago, Ill.
White-Rodgers Co., St. Louis, Mo. (Hydraulic-Action)
Yellow Springs Instrument Co., Inc., Yellow Springs, O.
Young Regulator Co., Cleveland, O.

REGULATORS, VACUUM

Associated Valve Co., North Wales, Pa.
Beach-Russ Co., New York, N. Y.
Bristol Co., The, Waterbury, Conn.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Hubbell Corp., Mundelein, Ill.
Johnson Service Co., Milwaukee, Wis.
Leslie Co., Lyndhurst, N.J.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Oxygen Equipment & Service Co., Chicago, Ill. (oxygen)
Penn Controls, Inc., Goshen, Ind.
Squires Co., C. E., The, Cleveland, O.
Trerice Co., H. O., Detroit, Mich.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Warren Engineering Co., Broadway, N.J.

RELAYS, ELECTRICAL

Advance Relays, Product of Electronics Div., Elgin National Watch Co., Burbank, Calif.
Aemco Inc Mankato, Minn
Airserco Mfg. Co., Pittsburgh, Pa.
Allen-Bradley Co., Milwaukee, Wis.
Allied Control Co., Inc., New York, N. Y.
American Instrument Co., Inc., Sliver Spring, Md.
American-Standard Controls Div., Detroit, Mich.
Arrow-Hart & Hegeman Elect. Co., Hartford, Conn.
Assembly Products, Inc., Chesterland, O.
Automatic Switch Co., Florham Park, N. J.
Barber-Colman Co., Rockford, Ill.
Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Baso, Inc., Milwaukee, Wis.
Benjamin Electric Mfg. Co., Des Plaines, Ill.
Better Engineered Controls, Los Angeles, Calif.
Bristol Co., The, Waterbury, Conn.
Clark Controller Co., Cleveland, O.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cook Electric Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Daytronic Corp., Dayton, O.
Deltron, Inc., Philadelphia, Pa.
Ebert Electronics Corp., Queens Village, N. Y.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Electric Autolite Co., Toledo, O.
Electro-Switch & Controls, Inc., Culver City, Calif.
Elizabeth Div. of Elastic Stop Nut Corp. of America, Elizabeth, N.J. (time delay)
Essex Wire Corp., Ft. Wayne, Ind.
Furnas Electric Co., Batavia, Ill.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
Guardian Electric Mfg. Co., Chicago, Ill.
H-B Instrument Co., Philadelphia, Pa.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hart Mfg. Co., The, Hartford, Conn.
Haydon Co., A. W., Waterbury, Conn.
Heinemann Electric Co., Trenton, N. J.
Instruments, Inc., Tulsa, Okla.
International Business Machines Corp., New York, N. Y
Leach Relay Co., Los Angeles, Calif.
Mallory & Co., Inc., P. R., Indianapolis, Ind.
McCorkle Co., D. H., Berkeley, Calif.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Monitor Controller, Rockland, Mass.
Penn Controls, Inc., Goshen, Ind.
Philadelphia Thermometer Co., Philadelphia.
Photomation, Inc., Bergenfield, N. J.
Potter & Brumfield, Princeton, Ind.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
RBM Controls Div., Essex Wire Corp., Logansport, Ind.
Signet Controls, Portland, Ore.
Simpson Electric Co., Chicago, Ill.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Struthers-Dunn, Inc., Pitman, N. J.
Synchro-Start Products, Inc., Skokie, Ill.
Texas Instruments Inc., Metals & Controls Div., Attleboro, Mass. (motor starting relays)
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Vapor Heating Corp., Chicago, Ill.
Ward Leonard Electric Co., Mt. Vernon, N. Y.
Westinghouse Electric Corp., Pittsburgh, Pa.
Wheelock Signals, Inc., Long Branch, N. J.
White-Rodgers Co., St. Louis, Mo.
Zell-Aire Corp., Reading, Pa.
Zenith Electric Co., Chicago, Ill.

RELAYS, PNEUMATIC

Bailey Meter Co., Cleveland, O.
Bristol Co., The, Waterbury, Conn.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Foxboro Co., Foxboro, Mass.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Johnson Service Co., Milwaukee, Wis.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Trerice Co., H. O., Detroit, Mich.

RELIEF VALVES

See Valves, Relief

REPAIR CLAMPS

See Clamps, Pipe Repair

REPAIR PLUGS FOR TANKS

See Plugs, Repair, for Tanks

RESEATERS, VALVE

Chicago Specialty Mfg. Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Economy Valve Seat Co., Bellwood, Ill.
Hammett Electric Co., Kansas City, Kans.
Leavitt Machine Co., Orange, Mass.
Skinner Co., M. B., South Bend, Ind.
Thor Power Tool Co., Aurora, Ill.

RETURN BENDS

See Bends, Pipe, Return

REVERSE REFRIGERATION CYCLE UNITS

See Unitary Air Conditioners, Year Around, Heat Pump (Reverse Refrigeration Cycle)

RINGS, ANGLE, FOR PIPE

Chicago Metal Mfg. Co., Chicago, Ill.

RINGS, BACKING, FOR PIPE WELDING

Alco Products, Inc., Schenectady, N. Y.
Arcos Corp., Philadelphia, Pa.
Grinnell Co., Inc., Providence, R. I.

Midwest Piping Co., Inc., St. Louis, Mo.
O.T.M. Corp., Houston, Tex.
Robvon Backing Ring Co., Elizabeth, N. J.
Stainless Processing Div., Wall Colmonoy Corp., Detroit, Mich.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Wedge Protectors, Inc., Cleveland, O.

RINGS, PISTON, FOR COMPRESSORS

Garlock, Inc., Palmyra, N. Y.
Koppers Company, Inc., Metal Products Div., Baltimore, Md.
McQuay-Norris Mfg. Co., St. Louis, Mo.
Perfect Circle Corp., Hagerstown, Ind.
Sealed Power Corp., Muskegon, Mich.

ROD, GAS WELDING

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Aluminum Co. of America, Pittsburgh, Pa.
American Steel & Wire Div., United States Steel Corp., Cleveland, O.
Ampco Metal, Inc., Milwaukee, Wis.
Anaconda American Brass Co., Waterbury, Conn.
Atlantic Steel Co., Atlanta, Ga.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Eutectic Welding Alloys Corp., Flushing, N. Y.
International Nickel Co., The, New York, N. Y.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.
Maurath, Inc., Cleveland, O.
Metal & Thermit Corp., Rahway, N. J.
Mir-O-Col Alloy Co., Los Angeles, Calif. (for hard facing)
National Cylinder Gas Div. of Chemetron Corp., Chicago. Ill.
Page Steel & Wire Division of American Chain & Cable Co., Inc., Monessen, Pa.
Revere Copper and Brass, Inc., New York, N. Y.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weldit, Inc., Detroit, Mich.
Youngstown Sheet & Tube Co., Youngstown, O.

ROLLER BEARINGS

See Bearings, Roller

ROOF COOLERS

See Systems, Roof Spraying

ROOF SPRAYING SYSTEMS

See Systems, Roof Spraying

ROOF VENTILATORS

See Ventilators, Roof

ROOM HUMIDIFIERS

See Humidifiers, Unit Room Type; and Unitary Air Conditioners, Winter

ROOM THERMOSTATS

See Thermostats, Room or Wall

ROTARY PUMPS

See Pumps, Rotary

ROTATOR, PIPE, FOR HOLDING PIPE WHILE CUTTING, WELDING

Aronson Machine Co., Arcade, N. Y.
Peck Co., Cecil C., Cleveland. O.

RUBBER BELTING

See Belting, Flat Rubber

RUBBER PACKING

See Packing, Rubber and Synthetic

RUBBER PIPE

See Pipe, Hard Rubber

SADDLE VALVES

See Valves, Saddle

SADDLE TEES

See Tees, Saddle

SADDLES FOR PIPE

See Tees, Saddle

SAFETY VALVES

See Valves, Safety, Steam

SALAMANDERS

See Heaters, Air, Direct Fired, Portable

SAWS, ELECTRIC, PORTABLE

Albertson & Co., Inc., Sioux City, Ia.
Black & Decker Mfg. Co., The, Towson, Md.
Buckeye Tools Corp., Dayton, O. (pneumatic)
Chicago Pneumatic Tool Co., New York, N. Y.
Clipper Mfg. Co., Kansas City, Mo. (for masonry and concrete)
Cummins Portable Tools, Div. of John Oster Mfg. Co., Milwaukee, Wis.
Evans Co., Robert G., Kansas City, Mo.
Eveready Briksaw Co., Kansas City, Mo. (for masonry)
Ingersoll-Rand Co., New York, N. Y.
International Register Co., Chicago, Ill.
Key-Hak Div., Producers & Distributors, Inc., Allentown, Pa.
Krieg, Inc., Victor J., New York, N. Y. (for cutting pipe)
Mid-States Welder Mfg. Co., Chicago, Ill.
Miller Falls Co., Greenfield, Mass.
Milwaukee Electric Tool Corp., Milwaukee, Wis.
Modern Mfg. Co., Inc., Willow Grove, Pa.
Portable Electric Tools, Inc., Geneva, Ill.
Porter-Cable Machine Co., Syracuse, N. Y.
R C S Tool Corp., Bloomington, Ill. (reciprocating)
Remington Arms Co., Inc., Bridgeport, Conn.
Skil Corp., Chicago, Ill.
Speedway Mfg. Co., Div. of Thor Power Tool Co., LaGrange Park, Ill.
Stanley Electric Tools Div., The Stanley Works, New Britain, Conn.
Thor Power Tool Co., Aurora, Ill.
United States Electrical Tool Co., Cincinnati, O.
Wachs Co., E. H., The, Chicago, Ill.
Wallace Supplies Mfg. Co., Chicago, Ill. (for abrasive materials)
Wen Products, Inc., Chicago, Ill.

SAWS, HOLE

Chicago Specialty Mfg. Co., Chicago, Ill.
Clipper Mfg. Co., Kansas City, Mo.
Evans Co., Robert G., Kansas City, Mo.
Misener Mfg. Co., Inc., Syracuse, N.Y.
Price & Rutzebeck, Hayward, Calif.
Skil Corp., Chicago, Ill.
Starbuck & Sons, Inc., R. M., Hartford, Conn.

SCAFFOLDS, PORTABLE

American Ladder & Scaffold Co., Inc., Miami, Fla.
Atlas Industrial Corp., Brooklyn, N.Y.
Beaver-Advance Corp., Ellwood City, Pa.
Bil-Jax, Inc., Archbold, O.
Building Service Co., Minneapolis, Minn.
Charles Machine Co., Perry, Okla.
Economy Engineering Co., Chicago, Ill.
Up-Right Scaffolds, Berkeley, Calif.
Waco Steel Scaffolding, Inc., Waco, Tex.

SCALE CONTROL

See Devices, Electrolytic; Treatment, Steam System; Treatment, Water

SCALE REMOVAL, CHEMICAL SERVICE FOR

Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Chemical Solvent Co., Birmingham, Ala.
Dearborn Chemical Co., Chicago, Ill.
Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
Magnus Chemical Co., Garwood, N. J.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Solvent Service, Inc., Painesville, O.

SCOOPS, AIR, FOR DEFLECTING FLOW IN DUCTS

A-J Mfg. Co., Kansas City, Mo.
Air Devices, Inc., New York, N. Y.
Cain Mfg. Inc., Birmingham, Ala.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
General Air Products Corp., Cedar Grove, N. J.
Krueger Air Conditioning Corp., Tucson, Ariz.
Titus Mfg. Corp., Waterloo, Ia.
Waterloo Register Co., Inc., Waterloo, Ia.

SCREENS, SUN REFLECTING

Construction Specialties, Inc., Cranford, N. J.
Federal Seaboard Terra Cotta Corp., New York, N. Y.
Kaiser Aluminum & Chemical Sales, Inc., Oakland, Calif.
Kane Mfg. Corp., Kane, Pa.
Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill.

SCREWS, SHEET METAL

Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Aluminum Co. of America, Pittsburgh, Pa.
American Screw Co., Willimantic, Conn.
Anti-Corrosive Metal Products Co., Inc., Castleton-On-Hudson, N. Y.
Continental Screw Co., New Bedford, Mass.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Elco Tool & Screw Corp., Rockford, Ill.
Harper Co., H. M., Morton Grove, Ill.
Hart & Cooley Mfg. Co., Holland, Mich.
Holub Industries, Inc., Sycamore, Ill.
Industrial Screw Co., Chicago, Ill.
Lamson & Sessions Co., Cleveland, O.
National Lock Co., Inc., Rockford, Ill.
Paine Co., Addison, Ill.
Parker-Kalon, A Div. of General American Transportation Corp., Clifton, N. J.
Pheoll Mfg. Co., Inc., Chicago, Ill.
Rockford Screw Products Co., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Scovill Mfg. Co., Waterbury, Conn.
Shakeproof Div., Illinois Tool Wks., Elgin, Ill.
Star Stainless Screw Co., Paterson, N. J.

SCREWS, SHEET METAL, WELDING

American Screw Co., Willimantic, Conn.
Anti-Corrosive Metal Products Co., Inc., Castleton-On-Hudson, N. Y.
Continental Screw Co., New Bedford, Mass.
Ohio Nut & Bolt Co., Berea, O.
Parker-Kalon, A Div. of General American Transportation Corp., Clifton, N. J.
Russell, Burdsall & Ward Bolt & Nut Co., Ft. Chester, N. Y.

SEALS, SHAFT, MECHANICAL

American Felt Co., Glenville, Conn.
Anchor Packing Co., Philadelphia, Pa.
Borg-Warner Mechanical Seals, Div. of Borg-Warner Corp., Los Angeles, Calif.
Chesterton Co., A. W., Everett, Mass.
Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Cleveland Graphite Bronze, Div. of Clevite Corp., Cleveland, O.
Crane Packing Co., Morton Grove, Ill.
Felt Products Mfg. Co., Skokie, Ill.
Felters Company, The, Boston, Mass. (wool felt)
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Garlock, Inc., Palmyra, N. Y.
Greene, Tweed & Co., North Wales, Pa.
Johns-Manville Corp., New York, N. Y.
Koppers Company, Inc., Metal Products Div., Baltimore, Md.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Magnetic Seal Corp., West Barrington, R. I.
McQuay-Norris Mfg. Co., St. Louis, Mo.
Minnesota Rubber Co., Minneapolis, Minn.
Navan Products Inc., El Segundo, Calif.
Parker Seal Co., Div. of Parker-Hannifin Corp., Cleveland, O.
Rotary Seal Div., Muskegon Piston Ring Co., Sparta, Mich.
Schwitzer Corp., Indianapolis, Ind.
Sealol Inc., Providence, R. I.

Standard-Thompson Corp., Waltham, Mass.
Syntron Co., Homer City, Pa.
United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J.

SEALS, TERMINAL, FOR COMPRESSORS

Henry Valve Co., Melrose Park, Ill.
Minnesota Rubber Co., Minneapolis, Minn.
Navan Products Inc., El Segundo, Calif.
Parker Seal Co., Div. of Parker-Hannifin Corp., Cleveland, O.
Watsco, Inc., Hialeah, Fla.

SEAMLESS PIPE

See Pipe, Steel, Seamless

SEPARATORS, AIR

Adams Co., Inc., R. P., Buffalo, N. Y.
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Bellows-Valvair, Div. of IBEC, Akron, O.
Binks Mfg. Co., Chicago, Ill.
Buxton Mfg. Co., Dover, N. J.
Canton Stoker Corp., Canton, O.
Centrifix Corp., Houston, Tex.
Clark Mfg. Co., Cleveland, O.
Combustion Engineering, Inc., New York, N. Y.
Crane Co., Chicago, Ill.
DeVilbiss Co., The, Toledo, O.
Dollinger Corp., Rochester, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
Gray Co., Inc., Minneapolis, Minn.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hankison Corp., Canonsburg, Pa.
Harman Equipment Co., Los Angeles, Calif.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Johnson Corp., Three Rivers, Mich.
Kaye & MacDonald, Inc., West Orange, N. J.
Kice Metal Products Co., Wichita, Kans.
Kraissl Co., Inc., The, Hackensack, N. J.
Leavitt Machine Co., Orange, Mass.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Quality Specialty Co., Inc., Camden, N. J.
Spencer Turbine Co., Hartford, Conn.
Spray Engineering Co., Burlington, Mass.
Strong, Carlisle & Hammond, Conneaut, O.
Taco Heaters, Inc., Cranston, R. I.
Trane Co., The, La Crosse, Wis.
Vortox Co., Claremont, Calif.
Wright-Austin Co., Detroit, Mich.

SEPARATORS, BLOWDOWN

Graver Water Conditioning Co., New York, N. Y.
Johnson Bros., Inc., Ferrysburg, Mich.
Wilson Engineering Corp., Chicago, Ill.

SEPARATORS, FLANGE

Kraissl Co., Inc., The, Hackensack, N. J.
Williams & Co., J. H., Buffalo, N. Y.
Wright-Austin Co., Detroit, Mich.

SEPARATORS, OIL

Acme Industries, Inc., Jackson, Mich.
Adams Co., Inc., R. P., Buffalo, N. Y.
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Boylston Steam Specialty Co., Chicago, Ill.
Canton Stoker Corp., Canton, O.
Centrifix Corp., Houston, Tex. (Gas and Vapor)
Cochrane Corp., Philadelphia, Pa.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Crane Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Harman Equipment Co., Los Angeles, Calif.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Hoppes Mfg. Co., Inc., Springfield, O.
Howe Ice Machine Co., Chicago, Ill.
Infilco, Inc., Tucson, Ariz.
Johnson Corp., The, Three Rivers, Mich.
Kaye & MacDonald, Inc., West Orange, N. J.
King Zeero Co., The, Chicago, Ill.
Kraissl Co., Inc., The, Hackensack, N. J.
Manufacturers Engineering & Equipment Corp., Hatboro, Pa.
National Valve & Mfg. Co., Pittsburgh, Pa.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Reco Products Div., Recony Corp., New York, N. Y.
Richmond Engineering Co., Richmond, Va.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sims Co., Erie, Pa.
Stickle Steam Specialties Co., Indianapolis, Ind.
Strong, Carlisle & Hammond, Conneaut, O.
Temprite Products Corp., Birmingham, Mich.
Vilter Mfg. Co., The, Milwaukee, Wis.
Wabash Corp., Chicago, Ill.
Wade Mfg. Co., Elgin, Ill.
Warner Lewis Co., Div. of Fram Corp., Tulsa, Okla.
Watkins Co., J. E., Maywood, Ill.
Worthington Corp., Harrison, N. J.
Wright-Austin Co., Detroit, Mich.
York Div., Borg-Warner Corp., York, Pa.

SETS, PIPE BIT, FOR BORING HOLES IN WOOD FOR PIPE AND TUBING

Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.

SEWAGE EJECTORS

See Ejectors, Sewage

SEWAGE PUMPS

See Pumps, Sewage

SHAFT SEALS, MECHANICAL

See Seals, Shafts, Mechanical

SHAFTS, FLEXIBLE, FOR CONTROL

Albertson & Co., Inc., Sioux City, Ia.
Arens Controls, Inc., Evanston, Ill.
Clark Flexible Link Shaft Co., Newton Highlands, Mass.
H & M Pipe Beveling Machine Co., Tulsa, Okla.
Healey Co., Lee, Glendale, Calif.
Piezo Mfg. Corp., Staten Island, N. Y.
Remington Arms Co., Inc., Bridgeport, Conn.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Stow Mfg. Co., Binghamton, N. Y.
Teleflex Industrial Products, Inc., Boyertown, Pa.

SHEARS, ELECTRICAL, PORTABLE

Beverly Shear Mfg. Co., Chicago, Ill.
Black & Decker Mfg. Co., Towson, Md.
Fenway Machine Co., Philadelphia, Pa.
Jemco Tool Corp., Seneca Falls, N. Y.
M-M-A, Inc., Lancaster, Pa.
Miller Falls Co., Greenfield, Mass.
Milton Equipment Co., Philadelphia, Pa.
Milwaukee Electric Tool Corp., Milwaukee, Wis.
Newage Industries, Inc., Jenkintown, Pa. (air)
Nielsen, Inc., E. V., Stamford, Conn.
Remington Arms Co., Inc., Bridgeport, Conn.
Skil Corp., Chicago, Ill.
Stanley Electric Tools Div., The Stanley Works, New Britain, Conn.
Thor Power Tool Co., Aurora, Ill.

SHEARS, POWER

Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Bertsch & Co., Inc., Cambridge City, Ind.
Beverly Shear Mfg. Co., Chicago, Ill.
Buckeye Tools Corp., Dayton, O.
Buffalo Forge Co., Buffalo, N. Y. (portable)
Cincinnati Shaper Co., Cincinnati, O.
Cleveland Crane & Eng. Co., Wickliffe, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Diamond Machine Tool Co., Pico, Calif.
Famco Machine Co., Kenosha, Wis.
H-A Mfg. Co., York, Pa.
Hendley & Whittemore, Beloit, Wis.
Kling Bros. Engineering Works, Chicago, Ill. (rotary) (double angle)
Lennox Tool & Machine Builders, Lima, O.
Libert Machine Co., Green Bay, Wis.
Milton Equipment Co., Philadelphia, Pa.
Modern Mfg. Co., Inc., Willow Grove, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
Quickwork Div., Whiting Corp., Harvey, Ill.
Remington Arms Co., Inc., Bridgeport, Conn.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
St. Louis Tool Co., St. Louis, Mo.
Stamco Inc., New Bremen, Ohio
Stanley Electric Tools Div., The Stanley Works, New Britain, Conn.
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.
Wysong & Miles Inc., Greensboro, N. C.

SHEARS AND SNIPS, HAND

Barlett Mfg. Co., Detroit, Mich.
Beverly Shear Mfg. Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Black & Decker Mfg. Co., Towson, Md. (electrically driven)
Bremil Mfg. Co., Erie, Pa.
Clauss Cutlery Co., Fremont, O.
Crescent Tool Co., Jamestown, N. Y.
Diamond Tool & Horseshoe Co., Duluth, Minn.
Fairmount Tool & Forging, Inc., Cleveland, O.
Hendley & Whittemore, Beloit, Wis.
Kidder Mfg. Co., Inc., J. F., Burlington, Vt.
Klenk's Aviation Snips, Wilmington, Del.
Lidseen of North Carolina, Inc., Hayesville, N. C.
Milton Equipment Co., Philadelphia, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
O'Neil-Irwin Mfg. Co., Lake City, Minn.
Peck, Stow & Wilcox Co., Southington, Conn.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Snap-on Tools Corp., Kenosha, Wis.
Thor Tool & Die Co., San Leandro, Calif.
Viking Shear Co., Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill.
Wiss & Sons Co., J., Newark, N. J.

SHEAVES

See Pulleys and Sheaves, for Belt Drives

SHEET METAL BRAKES

See Brakes, Sheet Metal

SHEET METAL DUCTS

See Ducts and Duct Fittings, Prefabricated Non-Flexible

SHEET METAL FITTINGS

See Ducts and Duct Fittings, Prefabricated Non-Flexible

SHEET METAL PUNCHES

See Punches, Sheet Metal

SHEETS, ALUMINUM

Aluminum Co. of America, Pittsburgh, Pa.
Anaconda Aluminum Co., Louisville, Ky.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Fairmont Aluminum Co., Fairmont, W. Va.
Frasse & Co., Inc., Peter A., New York, N. Y.
Hunter Mfg. Co., Aluminum Insulation Div., Bristol, Pa. (for pipe covering)
Kaiser Aluminum & Chemical Sales, Inc., Oakland, Calif.
Olin Mathieson Chemical Corp., Metals Div., New York, N.Y.
Revere Copper and Brass, Inc., New York.
Reynolds Metals Co., Richmond, Va.
Rigidized Metals Corp., Buffalo, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.

SHEETS, ALUMINUM COATED

Armco Steel Corp., Middletown, O.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.

Fairmont Aluminum Co., Fairmont, W. Va.
Great Western Steel Co., Chicago, Ill.
Rigidized Metals Corp., Buffalo, N. Y.
United States Steel Corp., Pittsburgh, Pa.

SHEETS AND BOARD, NON-METALLIC (OTHER THAN PLASTIC), FOR DUCT CONSTRUCTION

Carey Mfg. Co., Philip. Lockland, Cincinnati,
Celotex Corp., The, Chicago, Ill.
Johns-Manville Corp., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Met-L-Wood Corp., Chicago, Ill. (plywood composition material faced with sheet metal)
Nicolet Industries, Inc., Florham Park, N.J.
Ruberoid Co., New York, N. Y.
Technical Ply-Woods Sales, Chicago, Ill.

SHEETS, CLAD

Allegheny Ludlum Steel Corp., Pittsburgh, Pa.
Aluminum Co. of America, Pittsburgh, Pa.
Bart Mfg. Corp., Belleville, N. J.
Bridgeport Brass Co., Bridgeport, Conn. (laminates)
Central Steel & Wire Co., Chicago, Ill. (aluminum)
Engelhard Industries, Inc., Newark, N. J.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Ingersoll Steel Div., Borg-Warner Corp., Chicago, Ill. (stainless)
Lukens Steel Co. and Divisions, Coatesville, Pa
Republic Steel Corp., Cleveland, O.
Revere Copper & Brass, Inc., New York.
Reynolds Metals Co., Richmond, Va.
Rigidized Metals Corp., Buffalo, N. Y.

SHEETS, COPPER

Anaconda American Brass Co., Waterbury, Conn.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Hussey & Co., C. G., Div. of Copper Range Co., Pittsburgh, Pa.
New Haven Copper Co., The, Seymour, Conn.
Olin Mathieson Chemical Corp., Metals Div., East Alton, Ill. (Brass, copper, bronze, nickel silver, and phosphor bronze)
Revere Copper & Brass, Inc., New York.
Rigidized Metals Corp., Buffalo, N. Y.

SHEETS, LEAD

Alpha Metals, Inc., Jersey City, N. J.
American Smelting & Refining Co., Federated Metals Div., New York, N. Y.
Anchor Metal Co., Inc., Brooklyn, N. Y.
Belmont Smelting & Refining Wks., Inc., Brooklyn, N. Y.
Bunker Hill Co., The, Sales & Fabrication Div., San Francisco, Calif.
Division Lead Co., Summit, Ill.
Flemm Lead Co., Inc., Long Island City, N. Y.
Gardiner Metal Co., Chicago, Ill.
Knapp Mills, Inc., Long Island City, N. Y.
National Lead Co., New York, N. Y.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.
Rigidized Metals Corp., Buffalo, N. Y.
Rochester Lead Wks., Inc., Rochester, N. Y.

SHEETS, MAGNESIUM ALLOY

Dow Chemical Co., The, Midland, Mich.
Rigidized Metals Corp., Buffalo, N. Y.

SHEETS, METAL, WITH PROTECTIVE NON-METALLIC COATING

Bernard-Franklin Co., Inc., Philadelphia, Pa.
Bowman Steel Corp., Pittsburgh, Pa.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Ervite Corp., Erie, Pa.
Great Western Steel Co., Chicago, Ill.
Pittsburgh Steel Co., Pittsburgh, Pa.
Plasteel Products Corp., Washington, Pa.
Rigidized Metals Corp., Buffalo, N. Y.
Robertson Co., H. H., Pittsburgh, Pa.
Technical Ply-Woods Sales, Chicago, Ill. (Metal and plywood)

SHEETS, NICKEL AND NICKEL ALLOY

Bart Mfg. Corp., Belleville, N. J.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Crucible Steel Co. of America, Pittsburgh, Pa.
Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
International Nickel Co., Inc., The, New York, N. Y.
Lukens Steel Co. and Divisions, Coatesville, Pa.
Olin Mathieson Chemical Corp., Metals Div., East Alton, Ill. (nickel silver)
Rigidized Metals Corp., Buffalo, N. Y.

SHEETS, PLASTIC, FOR DUCTS AND HOODS

Argo Plastic Products, Cleveland, O. (polyethylene, polypropylene, PVC and penton)
Atlas Mineral Products Co., Mertztown, Pa.
Bolta Products, A Div. of General Tire & Rubber Co., Lawrence, Mass.
Byers Co., A. M., Pittsburgh, Pa. (Rigid PVC)
Ceilcote, Inc., Cleveland, O.
Chicago Molded Products Corp., Chicago, Ill.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (Polyvinyl chloride)
Corite-Reynolds Corp., Des Plaines, Ill.
Dayco Corp., Dayton, O.
Delbrook Engineering, Inc., Cambridge, Mass.
DuVerre, Inc., Buffalo, N. Y.
General Electric Co., Laminated Products Dept., Coshocton, O.
Formica Corp., The, Cincinnati, O.
Goodrich Industrial Products Co., B. F., Akron, O. (rigid)
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC)
Haveg Industries, Inc., Wilmington, Del.
Heil Process Equipment Corp., Cleveland, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Kaykor Industries, Inc., Yardville, N. J.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (PVC — Polypropylene)
Laminated Sheet Products Corp., Norwood, Mass.
Molded Fiber Glass Sheet Co., Ashtabula, O.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Quelcor, Inc., Chester, Pa.
Resolite Corp., Zelienople, Pa.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Seelye Craftsmen, Inc., Minneapolis, Minn.
Seiberling Rubber Co., Plastics Div., Newcomerstown, O.
Southern Plastics Co., Columbia, S. C.
United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J.
United States Rubber Co., New York, N. Y.

SHEETS, STEEL, COPPER BEARING

Acme Newport Steel Co., Newport, Ky.
Alan Wood Steel Co., Conshohocken, Pa.
Armco Steel Corp., Middletown, O.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel & Wire Co., Chicago, Ill.
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
Granite City Steel Co., Granite City, Ill.
Great Western Steel Co., Chicago, Ill.
Inland Steel Co., Chicago, Ill.
Lukens Steel Co. and Divisions, Coatesville, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Republic Steel Corp., Cleveland, O.
Rigidized Metals Corp., Buffalo, N. Y.
Sharon Steel Corp., Sharon, Pa.
Tennessee Coal & Iron Div., United States Steel Corp., Fairfield, Ala.
United States Steel Corp., Pittsburgh, Pa.
Weirton Steel Co., Weirton, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS, STEEL, GALVANIZED

Armco Steel Corp., Middletown, O.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel & Wire Co., Chicago, Ill.
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
Granite City Steel Co., Granite City, Ill.
Great Western Steel Co., Chicago, Ill.
Inland Steel Co., Chicago, Ill.
Inland Steel Products Co., Milwaukee, Wis.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Republic Steel Corp., Cleveland, O.
Rigidized Metals Corp., Buffalo, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sharon Steel Corp., Sharon, Pa.
Tennessee Coal & Iron Div., United States Steel Corp., Fairfield, Ala.
United States Steel Corp., Pittsburgh, Pa.
Weirton Steel Co., Weirton, W. Va.
Wheeling Corrugating Co., Wheeling, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS, STEEL, GALVANNEALED

American Agile Corp., Bedford, O. (sheets plastic)
Bethlehem Steel Co., Bethlehem, Pa.
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
Great Western Steel Co., Chicago, Ill.
Republic Steel Corp., Cleveland, O.
Rigidized Metals Corp., Buffalo, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sharon Steel Corp., Sharon, Pa.
United States Steel Corp., Pittsburgh, Pa.

SHEETS, STEEL, STAINLESS

Allegheny Ludlum Steel Corp., Pittsburgh.
Armco Steel Corp., Middletown, O.
Byers Co., A. M., Pittsburgh, Pa.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.
Crucible Steel Co. of America, Pittsburgh, Pa.
Eastern Stainless Steel Corp., Baltimore, Md.
Ingersoll Steel Div., Borg-Warner Corp., Chicago, Ill.
Jessop Steel Co., Washington, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Jones & Laughlin Steel Corp., Stainless Steel Div., Detroit, Mich.
Republic Steel Corp., Cleveland, O.
Rigidized Metals Corp., Buffalo, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sharon Steel Corp., Sharon, Pa.
Tennessee Coal & Iron Div., United States Steel Corp., Fairfield, Ala.
Union Steel Corp., Union, N. J.
United States Steel Corp., Pittsburgh, Pa.
Washington Steel Corp., Washington, Pa.

SHEETS, ZINC

American Zinc Products Div., Ball Brothers Co., Greencastle, Ind.
Belmont Smelting & Refining Wks., Inc., Brooklyn, N. Y.
Chase Brass & Copper Co., Waterbury, Conn.
Cheney Flashing Co., Trenton, N. J.
Illinois Zinc Co., Div. of Hydrometals, Inc., Chicago, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
Rigidized Metals Corp., Buffalo, N. Y.

SHIELDS, CORROSION, FOR PIPE JOINTS

Atlas Mineral Products Co., Mertztown, Pa.
Zippertubing Co., The, Los Angeles, Calif.

SHIELDS, VALVE BONNET

Industrial Products Co., Philadelphia, Pa.
Wilmington Plastics Co., Wilmington, Del.

SHOCK ABSORBERS, LIQUID

See Absorbers, shock, Liquid

SHUTTERS

See Louvers and Shutters

SIGHT GLASSES
See Glasses, Sight, for Pipe Lines

SIGNALS, LIQUID LEVEL
See Alarms, Liquid Level

SIGNALS, TANK FILL
See Alarms, Liquid Level

SILENCERS, DUCT
See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Insulation, Duct, Sound Deadening

SILENCERS FOR REDUCING COMPRESSOR INTAKE NOISE
Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
Binks Mfg. Co., Chicago, Ill.
Dollinger Corp., Rochester, N. Y.
General Sound Control, Inc., Hollydale, Calif.
Midwest Noise Control, Indianapolis, Ind.
Taylor Forge & Pipe Works, Chicago, Ill.

SIPHONS, STEAM GAGE
Chicago Nipple Mfg. Co., Oak Park, Ill.
Crane Co., Chicago, Ill.
New York Air Valve Corp., Brooklyn, N. Y.
Pittsburgh Nipple Works, Pittsburgh, Pa.
Trerice Co., H. O., Detroit, Mich.

SLEEVE BEARINGS
See Bearings, Sleeve

SLEEVES, PIPE REPAIR
See Clamps, Pipe Repair

SLIME AND ALGAE CONTROL, WATER TREATMENT FOR
See Treatment, Water, for Slime and Algae Control

SMOKE ALARMS
See Alarms, Smoke

SMOKE DETECTORS
See Indicators, Smoke; Alarms, Smoke

SMOKE ELIMINATORS
See Jets, Overfire Air, for Smoke Abatement

SMOKE GUNS
See Guns, Pots and Candles, Smoke and Smudge

SMOKE INDICATORS
See Indicators, Smoke

SMUDGE POTS
See Guns, Pots and Candles, Smoke and Smudge

SNOW MELTER, PORTABLE, ELECTRIC
Ampere Industries, Newark, N. J.
Modernheat Cable Corp., Kingsport, Tenn.
Roberson, Inc., Seattle, Wash.

SNOW MELTING ANTI-FREEZE
See Compounds Anti-Freeze

SOFTENERS, WATER
American Water Softener Co., Philadelphia.
American Well Works, Aurora, Ill.
Anderson-Stolz Corp., Kansas City, Mo.
Belco Industrial Equipment Div., Bogue Electric Mfg. Co., Paterson, N. J.
Bruner Corp., Milwaukee, Wis.
Clayton Mfg. Co., El Monte, Calif.
Cochrane Corp., Philadelphia, Pa.
Culligan, Inc., Norbrook, Ill.
Dearborn Chemical Co., Chicago, Ill.
Duro Co., Dayton, O.
Elgin Softener Corp., Elgin, Ill.
General Filter Co., Ames, Ia.
Graver Water Conditioning Co., New York.
Hungerford & Terry, Inc., Clayton, N. J.
Illinois Water Treatment Co., Rockford, Ill.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Modern Water Equipment Co., Freeport, Ill.
Myers & Bro. Co., F. E., The, Ashland, O.
Oakite Products, Inc., New York, N. Y.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Radiant Utilities Corp., Brooklyn, N. Y.
Red Jacket Mfg. Co., Davenport, Ia.
Reynolds Water Conditioning Co., Detroit, Mich.
Smith Chemical Co., E. W., La Puente, Calif.
Stover Water Softener Co., St. Charles, Ill.
Uniflow Mfg. Co., Erie, Pa.
Wood Mfg. Co., A. R., Luverne, Minn.

SOLAR HEAT REFLECTORS
See Canopies, Metal, Sun, Reflecting

SOLAR HEAT RESISTING LOUVERS AND SCREENS
See Louvers, Sun Reflecting; and Screens, Sun Reflecting

SOLAR SENSING INSTRUMENTS FOR HEATING AND AIR CONDITIONING
See Instruments, Solar Sensing, for Heating and Air Conditioning

SOLDER (SILVER), BRAZING ALLOYS, AND FLUXES
Aeroprojects, Inc., West Chester, Pa.
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Allen Co., Inc., L. B., Schiller Park, Ill.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Alloy Specialties Co., Pittsburgh, Pa.
Alpha Metals, Inc., Jersey City, N. J.
American Platinum & Silver Div., Engelhard Industries, Inc., Newark, N. J.
American Silver Co., Flushing, N. Y.
Anchor Metal Co., Inc., Brooklyn, N. Y.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Engelhard Industries, Inc., Newark, N. J.
Eutectic Welding Alloys Corp., Flushing, N. Y.
General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Handy & Harman, New York, N. Y.
Hi-Grade Alloy Corp., Chicago, Ill.
Johnson Gas Appliance Co., Cedar Rapids, Ia.
Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Lake Chemical Co., Chicago, Ill.
Linde Co., Div. of Union Carbide Corp., New York, N.Y.
Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.
Mir-O-Col Alloy Co., Inc., Los Angeles, Calif.
Mueller Brass Co., Port Huron, Mich.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
O'Reilly Engineering Co., Dallas, Tex.
Rexarc, Inc., W. Alexandria, O.
Ruby Chemical Co., Columbus, O.
Soldering Specialties Co., Summit, N. J.
Special Chemicals Corp., Ossining, N. Y.
Stainless Processing Div., Wall Colmonoy Corp., Detroit, Mich.
United Wire & Supply Corp., Cranston, R. I.
Wabash Corp., Chicago, Ill.
Weldit, Inc., Detroit, Mich.
Westinghouse Electric Corp., WEST-ING-ARC Dept., Buffalo, N. Y.

SOLDER (TIN-LEAD), AND FLUXES
Accurate Specialties Co., Inc., Woodside, N. Y.
Aeroprojects, Inc., West Chester, Pa.
Allen Co., Inc., L. B., Schiller Park, Ill.
Allied Weld-Craft, Inc., Indianapolis, Ind.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Alpha Metals, Inc., Jersey City, N. J.
American Sanitary Mfg. Co., Abingdon, Ill.
American Smelting & Refining Co., Federated Meta's Div., New York, N. Y.
American Solder & Flux Co., Philadelphia, Pa.
Anchor Metal Co., Inc., Brooklyn, N. Y.
Belmont Smelting & Refining Works, Inc., Brooklyn, N. Y.
Benson Co., Inc., Alex R., New Hartford, N. Y.
Blue Seal Chemical Co., Roselle Park, N. J.
Bohn Aluminum & Brass Corp., Detroit, Mich.
Bunker Hill Co., The, Sales & Fabrication Div., San Francisco, Calif.
Chase Brass & Copper Co., Waterbury, Conn.
Chemical Specialty Div. of Shooz Polish Mfg. Co., Milwaukee, Wis.
Division Lead Co., Summit, Ill.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Flemm Lead Co., Inc., Long Island City, N. Y.
Gardiner Metal Co., Chicago, Ill.
Helmco, Inc., Chicago, Ill.
Hercules Chemical Co., Inc., New York, N. Y.
Hi-Grade Alloy Corp., Chicago, Ill.
Johnson Gas Appliance Co., Cedar Rapids, Ia.
Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Johnson Foil Mfg. Co., The, St. Louis, Mo.
Kester Solder Co., Chicago, Ill.
Klauer Mfg. Co., Dubuque, Ia.
Lake Chemical Co., Chicago, Ill. (fluxes in paste, stik & liquid form)
Lenk Mfg. Co., Franklin, Ky.
London Chemical Co., Melrose Park, Ill.
Mill-Rose Co., Cleveland, O.
Mir-O-Col Alloy Co., Inc., Los Angeles, Calif.
Mueller Brass Co., Port Huron, Mich.
National Lead Co., New York, N. Y.
Paul-Lewis Laboratories, Inc., Milwaukee, Wis.
Revere Copper & Brass, Inc., Foil Div., Brooklyn, N. Y.
Rochester Lead Works, Inc., Rochester, N. Y.
Rotometals, San Francisco, Calif.
Ruby Chemical Co., Columbus, O.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Soldering Specialties Co., Summit, N. J.
Special Chemicals Corp., Ossining, N. Y.
Sulflo, Inc., Elizabeth, N. J.
Wolfe-Kote Co., Inc., Sheboygan, Wis.

SOLENOIDS AND SOLENOID COILS
Allen-Bradley Co., Milwaukee, Wis.
Allied Control Co., Inc., New York, N. Y.
Automatic Switch Co., Florham Park, N. J.
Baso, Inc., Milwaukee, Wis.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cook Electric Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Dole Valve Co., The, Morton Grove, Ill.
Dormeyer Industries, Chicago, Ill.
Essex Wire Corp., Ft. Wayne, Ind.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Guardian Electric Mfg. Co., Chicago, Ill.
Hammett Electric Co., Kansas City, Kan.
Hubbell Corp., Mundelein, Ill.
IMC Magnetics Corp., Westbury, Long Island, N. Y.
McDonnell & Miller, Inc., Chicago, Ill.
McQuay-Norris Mfg. Co., St. Louis, Mo.
National Acme Co., The, Cleveland, O.
Sporlan Valve Co., St. Louis, Mo.
Struthers-Dunn, Inc., Pitman, N. J.
Synchro-Start Products, Inc., Skokie, Ill.
Trombetta Solenoid Corp., Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.

SOLENOID VALVES
See Valves, Solenoid

SOLVENT, PENETRANT, FOR LOOSENING SCALE AND THREADED JOINTS
Cabot & Sons Co., Samuel, Boston, Mass.
Chesterton Co., A. W., Everett, Mass.
Claronex Products, Inc., Brooklyn, N. Y.
Hercules Chemical Co., Inc., New York, N. Y.
Krylon, Inc., Norristown, Pa.
Permatex Co., Inc., Long Island, N. Y.
Petroleum Solvents Corp., New York, N. Y.
Radiator Specialty Co., Charlotte, N. C.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Sealed Unit Parts Co., Inc., New York, N. Y.
Supersite Corp., Derby, Conn.
Tankit Co., The, Newark, N.J.

SOOT BLOWERS
See Blowers, Soot

SOOT DESTROYERS
See Destroyers, Soot, Chemical

SOUND ABSORBERS
See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Insulation, Duct, Sound Deadening

SOUND ATTENUATOR BOXES
See Units, Mixing, Sound and Volume Control, for Double Duct High Velocity Air Conditioning Systems

SOUND CONTROL FOR COOLING TOWERS
See Noise Elimination for Cooling Towers

SOUND DEADENING FOR DUCTS
See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems; Insulation, Duct, Sound Deadening

SOUND INDICATORS
See Indicators, Sound Level

SOUND TESTERS FOR LOCATING MECHANICAL TROUBLES
See Testers, Sound

SOUND TRAPS
See Absorbers, Sound, Duct Section, Prefabricated, for Noise Control in Duct Systems

SPARGER NOZZLES
See Nozzles, Sparger, for Tank Heating

SPEED CHANGERS
See Changers, Speed, Hydraulic Coupling; Changers, Speed, Mechanical

SPEED REDUCERS
See Reducers, Speed

SPILLAGE SWITCH FOR SHUTTING OFF GAS BURNER
See Switches, Flue Spillage, for Shutting Off Gas Burner

SPIRAL PIPE
See Pipe, Spiral Welded

SPIRAL PIPE FOR HIGH VELOCITY AIR SYSTEMS
See Ducts, Spiral Welded

SPLIT SYSTEMS
See Unitary Air Conditioners

SPOT WELDERS
See Welders, Spot

SPRAY HUMIDIFIERS
See Humidifiers, Direct, Spray Head

SPRAY NOZZLES
See Nozzles, Spray

SPRAY PAINTING BOOTHS
See Booths, Painting, Spray

SPRINKLER HEADS
See Heads, Sprinkler

SPRINKLER SYSTEM CONTROLS
See Controls, Fire Protection Sprinkler System; Valves, Fire Protection Sprinkler System Control

SPRINKLERS FOR FIRE PROTECTION
See Heads, Sprinkler

STACKS AND CHIMNEYS, INDUSTRIAL, PREFABRICATED
Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
Bethlehem Steel Co., Bethlehem, Pa.
Bigelow Co., The, New Haven, Conn.
Buffalo Tank Corp., Dunellen, N. J.
Chicago Metal Mfg. Co., Chicago, Ill.
Chicago Steel Tank Co., Div. of U.S. Industries, Inc., Chicago, Ill.
Condensation Engineering Corp., Chicago, Ill.
Dillon Steam Boiler Wks., Inc., D. M., Fitchburg, Mass.
DuVerre, Inc., Buffalo, N.Y. (plastic)
Finnigan & Co., Inc., J. J., Atlanta, Ga.
General Products Co., Inc., Fredericksburg, Va.
Hodge Boiler Wks., East Boston, Mass.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Kellogg Co., M. W., The, New York, N. Y.
Kirk & Blum Mfg. Co., Cincinnati, O.
Koven & Bro. Inc., L. O., Dover, N. J.
Leffel & Co., James, The, Springfield, O.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis.
Shutt Process Equipment Corp., St. Louis, Mo.
Smith Corp., A. O., Milwaukee, Wis.
Van-Packer Co., Div. of the Flintkote Co., Chicago Heights, Ill.
Wallace Co., William, Metalbestos Div., Belmont, Calif.
Winnen Incinerator Co., Bedford, O.

STAINLESS STEEL PIPE
See Pipe, Steel, Stainless

STAINLESS STEEL SHEETS
See Sheets, Steel, Stainless

STANDS, PIPE VISE
American Pipe Tool Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Erie Tool Wks., Erie, Pa.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Nye Tool Co., Chicago, Ill.
Oster Mfg. Co., Wickliffe, O.
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Talon Tools, Inc., North Arlington, N. J.
Toledo Pipe Threading Machine Co., Toledo, O.
Western Wire Products Co., St. Louis, Mo.
Williams & Co., J. H., Buffalo, N. Y.

STANDS, TANK
Acme Steel Co., Chicago, Ill. (slotted angle)
Acme Welding Div. of the United Tool & Die Co., West Hartford, Conn.
Basic Engineers, Inc., Sharpsburg, Pa.
Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.
Old Dominion Iron & Steel Corp., Richmond, Va.
Yuba Mfg. Div., Yuba Consolidated Industries Inc., Benicia, Calif.

STAPLES FOR FASTENING TUBING
See Hangers and Supports, Pipe

STARTERS, MOTOR
See Controllers and Starters, Motor

STEAM BOOSTER COMPRESSORS
See Compressors, Steam Booster

STEAM ENGINES
See Engines, Steam

STEAM GENERATORS
See Boilers

STEAM JET HEATERS
See Heaters, Steam Jet, for Liquids

STEAM JET REFRIGERATION
See Compressors, Refrigerating, Steam Jet

STEAM PRESSURE REGULATORS
See Valves, Pressure Reducing and Regulating

STEAM PUMPS
See Pumps, Steam

STEAM SEPARATORS
See Separators, Steam and Oil

STEAM TRAPS
See Traps, Steam

STEEL PIPE
See Pipe, Steel

STEEL TUBE FITTINGS, FLARED
See Fittings, Steel Tube, Flared

STEEL TUBING
See Tubing, Steel

STEEL UNIONS
See Unions, Steel

STEEL VALVES
See Valves, Gate; and Valves, Globe

STERILIZING LAMPS
See Lamps, Sterilizing, for Duct Installation

STERILIZING UNITS
See Units, Sterlizing, Air

STOCKS AND DIES
American Pipe Tool Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Beaver Pipe Tools, Inc., Warren, O.
Erie Tool Wks., Erie, Pa.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Mercury Hydraulics, Inc., Denver, Colo.
Nye Tool Co., Chicago, Ill.
Oster Mfg. Co., Wickliffe, O.
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Saunders Mfg. Co., Yonkers, N. Y.
Thor Tool & Die Co., San Leandro, Calif.
Threadwell Tap & Die Co., Greenfield, Mass.
Toledo Pipe Threading Machine Co., Toledo, O.

STOKERS, INDUSTRIAL AND COMMERCIAL
61 lb per hr and larger
Allington & Curtis Mfg. Co., Saginaw, Mich. (For shavings, chips and sawdust)
American Coal Burner and Wood Stoker Corp., Chicago, Ill. (solid fuels combination system)
American Engineering Co., Div. of United Industrial Corp., Philadelphia, Pa. underfeed spreader)
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Auburn Burner Co., Auburn, Ind.
Auburn Foundry, Inc., Heating Div., Auburn, Ind. (Worm feed, 61 to 850 lb per hr; hydraulic ram 450 to 2500 lb per hr)
Babcock & Wilcox Co., Boiler Div., Barberton, O.
Bituminous Coal Equipment, Inc., Indianapolis, Ind.
Bros Inc., Minneapolis, Minn. (spreader)
Canton Stoker Corp., Canton, O.
Carnes, Inc., John R., Lima, O.
Carpenter Heating & Air Conditioning Co., Cleveland, O.
Combustion Engineering, Inc., New York, N. Y.
Dayton Automatic Stoker Co., Dayton, O.
Detroit Stoker Co., Monroe, Mich. (3000 lb coal per hr to 400,000 lb steam per hr)
Electric Furnace-Man, Inc., Emmaus, Pa. (wet grate, and 61 and 85 lb round retort stokers)
Erie City Iron Works, Erie, Pa.
Flynn & Emrich Co., Baltimore, Md.
Frederick Iron & Steel Inc., Frederick, Md.
Freeman Heating Div., Illinois Iron & Bolt Co., Carpentersville, Ill.
Gross-Aire Mfg. Co., Overland, Mo.
Heating Assurance, Inc., Spokane, Wash.
Hershey Motorstoker, Manheim, Pa. (repair parts for all motorstokers)
Hoffman Combustion Engrg. Co., Lincoln Park, Mich. (spreader type; 10,000 to 500,000 lb per hr)
Iron Fireman Mfg. Co., Cleveland, O. (underfeed and pneumatic spreader)
Johnston & Jennings Co., Cleveland, O. (chain grate)
Kol-Master Corp., Oregon, Ill.
Laclede Stoker Co., St. Louis, Mo. (chain grate, spreader) (over 1200 lb per hr)
Leffel & Co., James, Springfield, O.
Meyer Furnace Co., The, Peoria, Ill.
Ormsby-Osterman, Inc., St. Louis, Mo.
Riley Stoker Corp., Worcester, Mass.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Sun-Fire Stoker Corp., New Albany, Ind. (Hopper)

V. & E. Products, Inc., Schuylkill Haven, Pa.
Whiting Fire Power Products Corp., Superior, Wis.
Whitty Co., Inc., Boston, Mass. (Bituminous)
Will-Burt Co., The, Orrville, O.
Worley Equipment, Inc., Chicago, Ill. (15 to 630 lb per hr)

STONEWARE PIPE
See Pipe, Stoneware

STORAGE WATER HEATERS
See Heaters, Water, Steam, Storage

STORE TYPE AIR CONDITIONERS
See Unitary Air Conditioners, Summer, Store Type

STRAINERS, PIPE LINE
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Airaterra (Roylyn Products), Glendale, Calif.
Airmatic Valve, Inc., Cleveland, O.
Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
Alco Valve Co., St. Louis, Mo.
American Air Filter Co., Inc., Louisville, Ky.
Andale Co., Philadelphia, Pa.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Armstrong Machine Wks., Three Rivers, Mich.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Barnes & Jones, Inc., Newtonville, Mass. (steam and water only)
Barrett Haentjens & Co., Hazleton, Pa.
Blackmer Pump Co., Grand Rapids, Mich.
Boylston Steam Specialty Co., Chicago, Ill.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Cashin Co., W. D., Boston, Mass.
Clark Mfg. Co., Cleveland, O.
Clayton Mark & Co., Evanston, Ill.
Cooper Alloy Corp., Hillside, N. J.
Corning Glass Works, Corning, N. Y.
Crane Co., Chicago, Ill.
Cuno Engineering Corp., Meriden, Conn.
Davis Regulator Co., Chicago, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
DeZurik Corp., Sartell, Minn.
Eddington Metal Specialty Co., Eddington, Pa.
Edward Valves, Inc., East Chicago, Ind.
Elliott Co., Jeannette, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (ceramic)
General Controls Co., Glendale, Calif. and Skokie, Ill.
Golden-Anderson Valve Specialty Co., Pittsburgh, Pa.
Granberg Corp., Subsid. of American Meter Co., Inc., Oakland, Calif.
Hauck Mfg. Co., Brooklyn, N. Y.
Hays Mfg. Co., Erie, Pa.
Henry Valve Co., Melrose Park, Ill.
Hetherington & Berner, Inc., Indianapolis, Ind. (jacketed)
Hoffman Specialty Mfg. Corp., Indianapolis.
Hubbell Corp., Mundelein, Ill.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Josam Mfg. Co., Michigan City, Ind.
Kaye & MacDonald, Inc., West Orange, N. J.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Kinney Vacuum Div., The New York Air Brake Co., Boston, Mass.
Kraissl Co., Inc., The, Hackensack, N. J.
L. R. P., Inc., Leicester, N. Y.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Maid-O'-Mist, Inc., Chicago, Ill.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Modine Mfg. Co., Racine, Wis.
Monarch Mfg. Wks., Inc., Philadelphia, Pa.
Morrison Brothers Co., Dubuque, Ia.
Mueller Co., Decatur, Ill.
Mueller Brass Co., Port Huron, Mich.
Mueller Steam Specialty Co., Inc., Brooklyn, N. Y.
Newark Wire Cloth Co., Newark, N. J.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Nugent & Co., Inc., Wm. W., Skokie, Ill.
OPW-Jordan Corp., Cincinnati, O.
Perfecting Service Co., Charlotte, N. C.
Phillips & Co., H. A., Chicago, Ill.
Pittsfield Products, Inc., Ann Arbor, Mich. (wire cloth)
Plant Engineering & Equipment Co., Elizabeth, N. J.
Pratt Co., Henry, Chicago, Ill.
Preferred Utilities Mfg. Corp., New York, N. Y.
Reliable Products Mfg. Co., Inc., Brooklyn, N. Y.
Riggio Co., Inc., Frank D., Rutherford, N. J.
Rockwood Sprinkler Co., Worcester, Mass.
Ronningen-Petter Co., Vicksburg, Mich.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Instrument Co., Detroit, Mich.
Self Cleaning Strainer Co., Oak Lawn, Ill. (basket and Y type)
Spence Engineering Co., Inc., Walden, N. Y.
Spray Engineering Co., Burlington, Mass.
Spraying Systems Co., Bellwood, Ill.
Standard Machine & Mfg. Co., St. Louis, Mo.
Staples & Pfeiffer, San Francisco, Calif.
Steinen Mfg. Co., Wm., Newark, N. J.
Sterling, Inc., Milwaukee, Wis.
Strong, Carlisle & Hammond, Conneaut, O.
Trane Co., The, LaCrosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
Velan Valve Corp., Plattsburgh, N. Y.
Warren Engineering Co., Broadway, N. J.
Water Cooling Corp., New York, N. Y.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.
Wright-Austin Co., Detroit, Mich.
Yarnall-Waring Co., Philadelphia, Pa.
Zurn Industries, Inc., Erie, Pa.

STRAINERS, REFRIGERANT, LIQUID LINE
Alco Valve Co., St. Louis, Mo.
American-Standard Controls Div., Detroit, Mich.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Elkhart Products Corp., Elkhart, Ind.
General Controls Co., Glendale, Calif.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Madden Brass Products Co., Aurora, Ill.
McIntire Co., The, Livingston, N. J.
Mueller Brass Co., Port Huron, Mich.
Newark Wire Cloth Co., Newark, N. J.
Pittsfield Products, Inc., Ann Arbor, Mich. (wire cloth)
Refrigerating Specialties Co., Chicago, Ill.
Refrigeration Research, Inc., Brighton, Mich.
Ronningen-Petter Co., Vicksburg, Mich.
Sealed Unit Parts Co., Inc., New York, N. Y.
Self Cleaning Strainer Co., Oak Lawn, Ill.
Sporlan Valve Co., St. Louis, Mo.
Standard Machine & Mfg. Co., St. Louis, Mo.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Velan Valve Corp., Plattsburgh, N. Y.
Wabash Corp., Chicago, Ill.
Watsco, Inc., Hialeah, Fla.
Zurn Industries, Inc., Erie, Pa.

STRAINERS, SUCTION, FOR AIR WASHERS
Eddington Metal Specialty Co., Eddington, Pa.
Keckley Co., O. C., Skokie, Ill.
Kraissl Co., Inc., The, Hackensack, N. J.
Milwaukee Valve Co., Milwaukee, Wis.
Newark Wire Cloth Co., Newark, N. J.
Ronningen-Petter Co., Vicksburg, Mich.
Staples & Pfeiffer, San Francisco, Calif.
Water Cooling Corp., New York, N. Y.
Zurn Industries, Inc., Erie, Pa.

STRESS RELIEVERS
See Preheaters and Stress Relievers, Electric, for Pipe Welds

STRIP HEATERS
See Heaters, Strip and Immersion, Electric

STRUCTURAL SHAPES
See Angles, Bars, Beams, Channels and Tees

STUD DRIVERS
See Fasteners, Powder Operated

STUD WELDERS
See Welders, Stud

SUCTION LINE HEAT EXCHANGERS
See Exchangers, Heat, Refrigerant Suction Line

SUMP PUMPS
See Pumps, Sump

SUPERHEATERS, PROCESS STEAM
Alstrom Corp., New York, N. Y.
Babcock & Wilcox Co., Boiler Div., Barberton, O.
Bell & Gossett Co., Morton Grove, Ill.
Bros Inc., Minneapolis, Minn.
Combustion Engineering, Inc., New York, N. Y.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Electro-Therm, Inc., Silver Spring, Md.
Erie City Iron Works, Erie, Pa.
Foster Wheeler Corp., New York, N. Y.
Murray Iron Wks. Co., Burlington, Ia.
Pantex Mfg. Corp., Pawtucket, R. I.
Springfield Boiler Co., Springfield, Ill.
Tranter Mfg. Inc., Lansing, Mich.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
Wiegand Co., Edwin L., Pittsburgh, Pa. (electric)

SURFACE, FINNED, COOLING, BRINE
Aerofin Corp., Syracuse, N. Y.
Alco Products, Inc., Schenectady, N. Y.
American-Standard Industrial Div., Detroit, Mich.
Anderson-Snow Corp., Chicago, Ill.
Blazer Corp., Passaic, N. J.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Frigid Coil, Inc., El Monte, Calif.
G. & O. Mfg. Co., New Haven, Conn.
Griscom-Russell Co., The, Massillon, O.
Heat-Exchangers, Inc., Chicago, Ill.
Heatron, Inc., York, Pa.
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Marlo Coil Co., St. Louis, Mo.
McCord Corp., Detroit, Mich.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Niagara Blower Co., New York, N. Y.
Recold Corp., Los Angeles, Calif.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Franklin Park, Ill.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Super Radiator Corp., Minneapolis, Minn.
Temtrol, Inc., Okarche, Okla.
Tenney Engineering, Inc., Union, N. J.
Trane Co., The, LaCrosse, Wis.
Vilter Mfg. Co., Milwaukee, Wis.
Wolverine Tube, Div. of Calumet and Hecla, Inc., Allen Park, Mich.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

SURFACE, FINNED, COOLING, COLD WATER
Acme Industries, Inc., Jackson, Mich.
Aerofin Corp., Syracuse, N. Y.
Alco Products, Inc., Schenectady, N. Y.
American-Standard Industrial Div., Detroit.

Anderson-Snow Corp., Chicago, Ill.
Blazer Corp., Passaic, N. J.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Chrysler Corp., Airtemp Div., Dayton, O.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Domestic Mfg. Corp., Houston, Tex.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Frigid Coil, Inc., El Monte, Calif.
G & O Mfg. Co., New Haven, Conn.
Governair Corp., Oklahoma City, Okla.
Griscom-Russell Co., The, Massillon, O.
Halstead & Mitchell, Pittsburgh, Pa.
Hastings Air Control, Inc., Omaha, Nebr.
Heat-Exchangers, Inc., Chicago, Ill.
Heatron, Inc., York, Pa.
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
Industrial Products Div., Perfex Corp., Milwaukee, Wis.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
Marlo Coil Co., St. Louis, Mo.
McCord Corp., Detroit, Mich.
McMillan Comfortaire, Inc., Jacksonville, Fla.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
National-U.S. Radiator Div., Crane Co., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Niagara Blower Co., New York, N. Y.
Peerless of America, Inc., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Franklin Park, Ill.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Super Radiator Corp., Minneapolis, Minn.
Temtrol, Inc., Okarche, Okla.
Tenney Engineering, Inc., Union, N. J.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, LaCrosse, Wis.
Tubenfin Coil Co., Houston, Tex.
U.S. Air Conditioning Corp., Delaware, O.
Vilter Mfg. Co., Milwaukee, Wis.
Wescott Snyder Mfg. Corp., Madison, N. J.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Witt Co., A. H., Los Angeles, Calif.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.
Worthington Corp., Harrison, N. J.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

SURFACE, FINNED, COOLING, DIRECT EXPANSION

Acme Industries, Inc., Jackson, Mich.
Aerofin Corp., Syracuse, N. Y.
Alco Products, Inc., Schenectady, N. Y.
American-Standard Industrial Div., Detroit.
Anderson-Snow Corp., Chicago, Ill.
Blazer Corp., Passaic, N. J.
Blissfield Mfg. Co., Blissfield, Mich.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Chrysler Corp., Airtemp Div., Dayton, O.
Domestic Mfg. Corp., Houston, Tex.
Drayer-Hanson Div., Crane Co., Los Angeles.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Fedders Corp., Buffalo, N. Y.
Frigid Coil, Inc., El Monte, Calif.
G & O Mfg. Co., New Haven, Conn.
Governair Corp., Oklahoma City, Okla.
Griscom-Russell Co., The, Massillon, O.
Halstead & Mitchell, Pittsburgh, Pa.
Hastings Air Control, Inc., Omaha, Nebr.
Heat-Exchangers, Inc., Chicago, Ill.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Heatron, Inc., York, Pa.
Howe Ice Machine Co., Chicago, Ill.
Imeco, Inc., Chicago, Ill.
Industrial Products Div., Perfex Corp., Milwaukee, Wis.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
Marlo Coil Co., St. Louis, Mo.
McCord Corp., Detroit, Mich.
McMillan Comfortaire, Inc., Jacksonville, Fla.
McQuay, Inc., Minneapolis, Minn.
Melchior, Armstrong, Dessau, Inc., Ridgefield, N.J.
Modine Mfg. Co., Racine, Wis.
National-U.S. Radiator Div., Crane Co., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Peerless of America, Inc., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Franklin Park, Ill.
Rome-Turney Radiator Co., Rome, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Super Radiator Corp., Minneapolis, Minn.
Temtrol, Inc., Okarche, Okla.
Tenney Engineering, Inc., Union, N. J.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, LaCrosse, Wis.
Tranter Mfg. Inc., Lansing, Mich.
Tubenfin Coil Co., Houston, Tex.
United Electric Co., Wichita Falls, Tex.
U. S. Air Conditioning Corp., Delware, O.
Vilter Mfg. Co., Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Witt Co., A. H., Los Angeles, Calif.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.
Worthington Corp., Harrison, N. J.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

SURFACE, FINNED, ELECTRIC HEATING ELEMENT

Blazer Corp., Passaic, N. J.
Marlo Coil Co., St. Louis, Mo.
McMillan Comfortaire, Inc., Jacksonville, Fla.
Roberson, Inc., Seattle, Wash.
Waage Electric, Inc., Kenilworth, N. J.
Wiegand Co., E. L., Pittsburgh, Pa.
Wilson Electric Furnace Co., Rossville, Ga.

SURFACE, FINNED, HEATING

Also See Radiation; Pipe, Finned; Tubing, Finned

SURFACE, FINNED, HEATING AND COOLING, PRE-ASSEMBLED, INCLUDING COILS, ELIMINATOR PLATES, SETTLING TANK, AND CASING

Blazer Corp., Passaic, N. J.
Clarage Fan Co., Kalamazoo, Mich.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Marlo Coil Co., St. Louis, Mo.
Modine Mfg. Co., Racine, Wis.
National-U.S. Radiator Div., Crane Co., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Rome-Turney Radiator Co., Rome, N. Y.
Temtrol, Inc., Okarche, Okla.
Trane Co., The, LaCrosse, Wis.

SURFACE, FINNED, HEATING, INDIRECT, FERROUS

Anderson-Snow Corp., Chicago, Ill.
Bayley-Blower Co., A Div. of the Green Fuel Economizer Co., Inc., Milwaukee, Wis.
Drayer-Hanson Div., Crane Co., Los Angeles.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Fedders Corp., Heating Div., Trenton, N. J.
Griscom-Russell Co., The, Massillon, O.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Marlo Coil Co., St. Louis, Mo.
McCord Corp., Detroit, Mich.
Modine Mfg. Co., Racine, Wis.
Moore Dry Kiln Co., Jacksonville, Fla.
Murray Mfg. Co., D. J., Wausau, Wis.
National-U.S. Radiator Div., Crane Co. Johnstown, Pa.
New York Blower Co., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Franklin Park, Ill.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Tenney Engineering, Inc., Union, N. J.
Trane Co., The, LaCrosse, Wis.
Vulcan Radiator Co., Hartford, Conn.
Webster & Co., Warren, Camden, N. J.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

SURFACE, FINNED, HEATING, INDIRECT, NON-FERROUS

Acme Industries, Inc., Jackson, Mich.
Aerofin Corp., Syracuse, N. Y.
American-Standard Industrial Div., Detroit.
Anderson-Snow Corp., Chicago, Ill.
Bayley Blower Co., A Div. of the Green Fuel Economizer Co., Inc., Milwaukee, Wis.
Blazer Corp., Passaic, N. J.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Domestic Mfg. Corp., Houston, Tex.
Drayer-Hanson Div., Crane Co., Los Angeles.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Fedders-Corp., Heating Div., Trenton, N. J.
G & O Mfg. Co., New Haven, Conn.
Governair Corp., Oklahoma City, Okla.
Griscom-Russell Co., The, Massillon, O.
Halstead & Mitchell, Pittsburgh, Pa.
Hastings Air Control, Inc., Omaha, Neb.
Heat-Exchangers, Inc., Chicago, Ill.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Hoff Mfg. Co., Bethany, New Haven, Conn.
Industrial Products Div., Perfex Corp., Milwaukee, Wis.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lewis & Saunders, Inc., Lakeport, N. H.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Nesbitt, Inc., John J., Philadelphia, Pa.
Peerless of America, Inc., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Refrigeration Appliances, Inc., Chicago, Ill.
Rigidbilt Inc., Franklin Park, Ill.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Super Radiator Corp., Minneapolis, Minn.
Temtrol, Inc., Okarche, Okla.
Tenney Engineering, Inc., Union, N. J.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, LaCrosse, Wis.
Tubenfin Coil Co., Houston, Tex.
U. S. Air Conditioning Corp., Delaware, O.
Vulcan Radiator Co., Hartford, Conn.
Webster & Co., Warren, Camden, N. J.
Wescott Snyder Mfg. Corp., Madison, N. J.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Witt Co., A. H., Los Angeles, Calif.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

SURFACE THERMOSTATS

See Thermostats, Surface

SUSPENDED FURNACES

See Heaters, Air

SWING JOINTS

See Joints, Pipe, Flexible Swing and Revolving

SWITCHES, ELECTRICAL

Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Adam Electric Co., Frank, St. Louis, Mo.
Allen-Bradley Co., Milwaukee, Wis.
Allied Control Co., Inc., New York, N. Y.
Arrow-Hart & Hegeman Elect. Co., Hartford, Conn.
Automatic Switch Co., Florham Park, N. J.
Barber-Colman Co., Rockford, Ill.
Better Engineered Controls, Los Angeles, Calif.
CRS Industries, Inc., Philadelphia, Pa.
Circuit Protective Devices Dept., General Electric Co., Plainville, Conn. (safety)
Clark Controller Co., Cleveland, O.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Divac Div., Acme Machine Works, Hawthorne, Calif.
Ebert Electronics Corp., Queens Village, N. Y.
Electric Controller & Mfg. Co., Div. of Square D Co., Cleveland, O.
Essex Wire Corp., Ft. Wayne, Ind.
Furnas Electric Co., Batavia, Ill.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
General Electric Co., Distribution Unit, Plainville, Conn.
General Electric Co., Wiring Device Dept., Electric Comfort Heating Section, Louisville, Ky.
Goodwill Mfg. Co., Chicago, Ill.
Guardian Electric Mfg. Co., Chicago, Ill.
H-B Instrument Co., Philadelphia, Pa.
Hammett Electric Co., Kansas City, Kans.
Hart Mfg. Co., Hartford, Conn.
Haydon Co., A. W., Waterbury, Conn.
Heinemann Electric Co., Trenton, N. J.
I-T-E Circuit Breaker Co., Philadelphia, Pa.
Kulka Electric Corp., Mt. Vernon, N. Y.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Mallory & Co., Inc., P. R., Indianapolis, Ind.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., Chicago, Ill.
Micro Switch Div. of Minneapolis-Honeywell Regulator Co., Freeport, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Monitor Controller, Rockland, Mass.
Morse-Smith-Morse, Inc., Watertown, Mass.
National Acme Co., The, Cleveland, O
Nelson Electric Mfg. Co., Tulsa, Okla. (inertia; for shutting down cooling towers in case of unbalance)
Parish Co., New Orleans, La.
Penn Controls, Inc., Goshen, Ind.
Pyle-National Co., The, Chicago, Ill.
Reynolds Electric Co., River Grove, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Square D Co., Distribution Equipment Div., Lexington, Ky.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Struthers-Dunn, Inc., Pitman, N. J.
Texas Instruments Inc., Metals & Controls Div., Attleboro, Mass. (precision)
Tuttle Electric Products, Inc., Kirkland, Ill.
Unimax Switch Div., W. L. Maxson Corp., Wallingford, Conn.
United Electric Controls Co., Watertown, Mass.
Wadsworth Electric Mfg. Co., Inc., Covington, Ky.
Westinghouse Electric Corp., Pittsburgh, Pa.
White-Rodgers Co., St. Louis, Mo.
Wind-Way Fan & Ventilator Co., New Orleans, La. (fire fuse)
Zell-Aire Corp., Reading, Pa.
Zenith Electric Co., Chicago, Ill.

SWITCHES, FLOAT, REFRIGERATION

Alco Valve Co., St. Louis, Mo.
Allen-Bradley Co., Milwaukee, Wis.
Arrow-Hart & Hegeman Elect. Co., Hartford, Conn.
Clark Controller Co., Cleveland, O.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Frick Co., Waynesboro, Pa.
Furnas Electric Co., Batavia, Ill.
Magnetrol, Inc., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.

SWITCHES, FLOW

Barton Instrument Corp., Monterey Park, Calif.
Cleveland Controls, Inc., Cleveland, O.
Cook Electric Co., Chicago, Ill.
Dietz Co., Inc., Henry G., Long Island City, N. Y.
Drying Systems Co., Chicago, Ill. (air)
Eclipse Fuel Engineering Co., Rockford, Ill.
Fischer & Porter Co., Warminster, Pa.
Flow Actuated Control Co., Inc., New York, N. Y.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Appliance Control Dept., Morrison, Ill.
Hays Mfg. Co., Erie, Pa.
Instruments, Inc., Tulsa, Okla.
Magnetrol Inc., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Penn Controls, Inc., Goshen, Ind.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.

SWITCHES, FLUE SPILLAGE, FOR SHUTTING OFF GAS BURNER

Cleveland Controls, Inc., Cleveland, O.
Wilson Industries, Inc., Brooklyn, N. Y.

SWITCHES, GAS DENSITY

Newark Controls Co., Bloomfield, N.J.

SWITCHES, LIQUID LEVEL

Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
Alco Valve Co., St. Louis, Mo.
Allen-Bradley Co., Milwaukee, Wis.
Arrow-Hart & Hegeman Elect. Co., Hartford, Conn.
American-Standard Controls Div., Detroit, Mich.
Automatic Control Co., St. Paul, Minn.
Automation Products, Inc., Houston, Tex.
Barton Instrument Corp., Monterey Park, Calif.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Cissell Mfg. Co., Inc., W. M., Louisville, Ky.
Clark Controller Co., Cleveland, O.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cook Electric Co., Chicago, Ill.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
Dietz Co., Inc., Henry G., Long Island City, N. Y.
Electronics Corp. of America, Cambridge, Mass.
Fischer & Porter Co., Warminster, Pa.
Furnas Electric Co., Batavia, Ill.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hays Mfg. Co., Erie, Pa.
Healy Ruff Co., St. Paul, Minn.
Instruments, Inc., Tulsa, Okla.
Kenco Pump Div., American Crucible Products Co., Lorain, O.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Magnetrol Inc., Chicago, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
Mercoid Corp., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Newark Controls Co., Bloomfield, N. J.
Penn Controls, Inc., Goshen, Ind.
Petrometer Corp., Long Island City, N. Y.
Scaico Controls Inc., Delanco, N. J.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
United Electric Controls Co., Watertown, Mass.
Watkins Co., J. E., Maywood, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa.

SWITCHES, MERCURY

American-Standard Controls Div., Detroit, Mich.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Ebert Electronics Corp., Queens Village, N. Y.
G. M. Mfg. Co., New York, N. Y.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
General Electric Co., Wiring Device Dept., Electric Comfort Heating Section, Louisville, Ky.
H-B Instrument Co., Philadelphia, Pa.
Mercoid Corp., Chicago, Ill.
Micro Switch Div. of Minneapolis-Honeywell Reg. Co., Freeport, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Newark Controls Co., Bloomfield, N. J.
Westinghouse Electric Corp., Pittsburgh, Pa.

SWITCHES, PNEUMATIC

Automatic Control Co., St. Paul, Minn.
Bristol Co., The, Waterbury, Conn.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cook Electric Co., Chicago, Ill.
Foxboro Co., Foxboro, Mass.
Instruments, Inc., Tulsa, Okla.
Johnson Service Co., Milwaukee, Wis.
Magnetrol, Inc., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Scaico Controls Inc., Delanco, N. J.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Trerice Co., H. O., Detroit, Mich.
United Electric Controls Co., Watertown, Mass.

SWITCHES, PRESSURE AND VACUUM

Allen-Bradley Co., Milwaukee, Wis.
American-Standard Controls Div., Detroit, Mich.
Automatic Control Co., St. Paul, Minn.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Barksdale Valves, Los Angeles, Calif.
Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., Milford, Conn.
Bristol Co., The, Waterbury, Conn.
Cleveland Controls, Inc., Cleveland, O.
Controls Co. of America Soreng Div., Schiller Park, Ill.
Cook Electric Co., Chicago, Ill.
Cooper Hewitt Electric Co., Div. of Sperti-Faraday, Inc., Hoboken, N. J.
Cutler-Hammer, Inc., Milwaukee, Wis.
Defender Instrument & Regulator Co., Boody, Ill.
Dewey Gas Furnace Co., Detroit, Mich.
Dietz Co., Inc., Henry G., Long Island City, N. Y.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Electronics Corp. of America, Cambridge, Mass.
Ellison Draft Gage Co., Chicago, Ill.
Fasco Industries, Inc., Rochester, N.Y.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Friez Instrument Div., Bendix Corp., Baltimore, Md.
Furnas Electric Co., Batavia, Ill.
General Controls Corp., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Giannini & Co., Inc., G. M., Pasadena, Calif.
Healy Ruff Co., St. Paul, Minn.
Longergan Co., J. E., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.

McQuay-Norris Mfg. Co., St. Louis, Mo.
Mercoid Corp., Chicago, Ill.
Meriam Instrument Co., The, Cleveland, O.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Nason Co., Clarkston, Mich.
Newark Controls Co., Bloomfield, N. J.
Penn Controls, Inc., Goshen, Ind.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Scully Signal Co., Melrose, Mass.
Shallcross Controls, Inc., Markesan, Wis.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Synchro-Start Products, Inc., Skokie, Ill.
Trerice Co., H. O., Detroit, Mich.
United Electric Controls Co., Watertown, Mass.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Wallace & Tiernan, Inc., Belleville, N.J.
Westinghouse Electric Corp., Pittsburgh, Pa.
White-Rodgers Co., St. Louis, Mo.

SWITCHES, TIME

Aemco Inc., Mankato, Minn.
Allen-Bradley Co., Milwaukee, Wis.
April Showers Div., Swartwout Fabricators, Inc., Kokomo, Ind.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Cincinnati Time Recorder Co., Cincinnati, O.
Cissell Mfg. Co., W. M., Louisville, Ky.
Cleveland Controls, Inc., Cleveland, O.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Cramer Controls Corp., Centerbrook, Conn.
Cutler-Hammer, Inc., Milwaukee, Wis.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Elizabeth Div. of Elastic Stop Nut Corp. of America, Elizabeth, N.J.
General Controls Corp., Glendale, Calif. and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
Hammett Electric Co., Kansas City, Kans.
Hansen Mfg. Co., Princeton, Ind. (timing motors and time machine)
Haydon Co., A. W., Waterbury, Conn.
Haydon Div., General Time Corp., Torrington, Conn.
Heat-Timer Corp., New York, N. Y.
International Register Co., Chicago, Ill.
Mallory & Co., Inc., P. R., Indianapolis, Ind.
Miller-Harris Instrument Co., Milwaukee.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Paragon Electric Co., Two Rivers, Wis.
Partlow Corp., The, New Hartford, N. Y.
Ranco Incorporated, Columbus, O.
Reliance Automatic Lighting Co., Racine, Wis.
Rhodes, Inc., M. H., Hartford, Conn.
Sangamo Electric Co., Springfield, Ill.
Sarcotherm Controls., Inc., New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Stromberg Div., General Time Corp., Thomaston, Conn.
Telechron Timers and Motors, Clock & Timer Dept., General Electric Co., Ashland, Mass.
Tork Time Controls, Inc., Mount Vernon, N. Y.
Tuttle Electric Products, Inc., Kirkland, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa.
White-Rodgers Co., St. Louis, Mo.
Zenith Electric Co., Chicago, Ill.

SWIVEL PIPE COUPLINGS

See Joints, Pipe, Flexible Swing and Revolving

SYSTEMS, COMBUSTION CONTROL

Bailey Meter Co., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Bristol Co., Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia.
Canton Stoker Corp., Canton, O.
Cash Co., A. W., Decatur, Ill.
Cleveland Controls, Inc., Cleveland, O.
Coen Controls Co., Inc., San Francisco, Calif.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Dayton Automatic Stoker Co., Dayton, O.
Defender Instrument & Regulator Co., Boody, Ill.
De-Tec-Tronic Corp., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electronics Corp. of America, Cambridge, Mass.
Fischer & Porter Co., Warminster, Pa.
Foster Wheeler Corp., New York, N. Y.
GPE Controls, Inc., Chicago, Ill.
General Controls Co., Glendale, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hays Corp., Michigan City, Ind.
Heat-Timer Corp., New York, N. Y.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Instruments, Inc., Tulsa, Okla.
Leahy Mfg. Co., Los Angeles, Calif.
Leeds & Northrup Co., Philadelphia, Pa.
Lientz Co., B. P., Kansas City, Mo.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Penn Controls, Inc., Goshen, Ind.
Photomation, Inc., Bergenfield, N. J.
Plant Equipment Div., General Blower Co., Inc., Philadelphia, Pa.
Protection Controls, Inc., Skokie, Ill.
Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Shallcross Controls, Inc., Markesan, Wis.
Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Stout & Sons, David, St. Louis, Mo.
Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.
White-Rodgers Co., St. Louis, Mo.

SYSTEMS, CONDENSATE RETURN

Acker Corp., Meridian, Miss.
Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Barnes & Jones, Inc., Newtonville, Mass.
Chicago Pump Hydrodynamics Div., Machinery & Chemical Corp., Chicago, Ill.
Cissell Mfg. Co., Inc., W. M., Louisville, Ky.
Decatur Pump Co., Decatur, Ill.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Eclipse Boiler Div., Eclipse Fuel Engineering Co., Chattanooga, Tenn.
Goulds Pumps, Inc., Seneca Falls, N. Y.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Johnson Corp., The, Three Rivers, Mich.
Kaiser Co., E. B., Glenview, Ill.
Lattner Mfg. Co., P. M., Cedar Rapids, Iowa
Liqui-Therm Products, Inc., Brookfield, Wis.
Patterson-Kelley Co., Inc., The, E. Stroudsburg, Pa.
Roth Co., Roy E., Rock Island, Ill.
Sarco Co., Inc., New York, N. Y.
Sterling Engineering & Mfg. Corp., Hyde Park, Mass.
Stout & Sons, David, St. Louis, Mo.
Weil Pump Co., Chicago, Ill.
York-Shipley, Inc., York, Pa.

SYSTEMS, DUST CONTROL

American-Standard Industrial Div., Detroit, Mich.
CRS Industries, Inc., Philadelphia, Pa.
Day Co., The, Minneapolis, Minn.
Kirk & Blum Mfg. Co., Cincinnati, O.
Schneible Co., Claude B., Detroit, Mich.

SYSTEMS, ELECTRIC PIPE HEATING

Fluid Systems, Inc., New Haven, Conn.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
Hammett Electric Co., Kansas City, Kans.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
Trent, Inc., Philadelphia, Pa.
Wiegand Co., Edwin L., Pittsburgh, Pa.

SYSTEMS, FIRE EXTINGUISHING, AND HEAT AND SMOKE DETECTORS

Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Blaw Knox Co., Power Piping Div., Pittsburg, Pa.
Cardox Corp., Chicago, Ill.
Cincinnati Time Recorder Co., Cincinnati, O.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Fyr-Fyter Co., Dayton, O. (carbon dioxide; dry chemical; foam)
Grinnell Co., Inc., Providence, R. I.
Heat-Timer Corp., New York, N. Y.
Hodgman Mfg. Co., Inc., Taunton, Mass.
Mearlcrete Div., Mearl Chemical Corp., Roselle Park, N. J.
Miller-Harris Instrument Co., Milwaukee, Wis.
Raisler Corp., Grimes Sprinkler Div., New York, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.
Sperti Faraday, Inc., Adrian, Mich.
Worner Electronic Devices, Rankin, Ill.

SYSTEMS, HEATING, HIGH TEMPERATURE HOT WATER

Over 350 F

American Hydrotherm Corp., Long Island City, N. Y.
Buxton Mfg. Co., Dover, N. J.
Combustion Engineering Inc., New York, N. Y.
International Boiler Works, The, East Stroudsburg, Pa.
Kaiser Co., E. B., Glenview, Ill.
Preferred Utilities Mfg. Corp., New York, N. Y.
Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
Taco Heaters, Inc., Cranston, R. I.

SYSTEMS, HEATING, HOT WATER

Bell & Gossett Co., Morton Grove, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Kaiser Co., E. B., Glenview, Ill.
Nesbitt, Inc., John J., Philadelphia, Pa.
Raypak Co., Inc., El Monte, Calif.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A. Peru, Ind.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Webster & Co., Warren, Camden, N. J.
Weil-McLain Co., Michigan City, Ind.

SYSTEMS, HEATING, VACUUM

Barnes & Jones, Inc., Newtonville, Mass.
Dunham-Bush, Inc., West Hartford, Conn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Monash-Younker Co., Inc., Chicago, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Webster & Co., Warren, Camden, N. J.

SYSTEMS, HEATING, VAPOR

Barnes & Jones, Inc., Newtonville, Mass.
Dunham-Bush, Inc., West Hartford, Conn.
Hoffman Specialty Mfg. Corp., Indianapolis.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Monash-Younker Co., Inc., Chicago, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
Webster & Co., Warren, Camden, N. J.

SYSTEMS, HEATING AND VENTILATING, GAS OR OIL FIRED, WARM AIR, FOR SCHOOL CLASSROOMS

American Foundry & Furnace Co., Bloomington, Ill.
American-Standard Industrial Div., Detroit, Mich.

Lennox Industries Inc., Des Moines, Ia.
Norman Products Co., Inc., Columbus, O.

SYSTEMS, HEATING, ZONE CONTROL

Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Armstrong Machine Wks., Three Rivers, Mich.
Au-Temp-Co Corp., New York, N. Y.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Bell & Gossett Co., Morton Grove, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.
Heat-Timer Corp., New York, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Johnson Service Co., Milwaukee, Wis.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
SelecTemp Div., Iron Fireman Mfg. Co., Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Weil-McLain Co., Michigan City, Ind.
White-Rodgers Co., St. Louis, Mo.
Zone-Heat Regulator Co., Garrettsville, O.

SYSTEMS, HOT GAS DEFROSTING, FOR REFRIGERATION

Blazer Corp., Passaic, N. J.
Dean Products, Inc., Brooklyn, N. Y.
Dole Refrigerating Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
McQuay, Inc., Minneapolis, Minn.
Recold Corp., Los Angeles, Calif.
Refrigerating Specialties Co., Chicago, Ill.
Tenney Engineering, Inc., Union, N. J.
Vilter Mfg. Co., The, Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.
York Div., Borg-Warner Corp., York, Pa.

SYSTEMS, LIQUID RECIRCULATION, FOR REFRIGERATION

McQuay, Inc., Minneapolis, Minn.
Vilter Mfg. Co., Milwaukee, Wis.
Watkins Co., J. E., Maywood, Ill.

SYSTEMS, PROCESS HEATING, HIGH TEMPERATURE

American Hydrotherm Corp., Long Island City, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Beltran Associates, Inc., Brooklyn, N. Y.
Buxton Mfg. Co., Dover, N. J.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Drying Systems Co., Chicago, Ill.
Eclipse Boiler Div., Eclipse Fuel Engineering Co., Chattanooga, Tenn.
Foster Wheeler Corp., New York, N. Y.
Hynes Electric Heating Div., Turbine Equipment Co., Westfield, N. J.
International Boiler Works, The, East Stroudsburg, Pa.
Kaiser Co., E. B., Glenview, Ill.
Mitchell & Co., Inc., W. K., Philadelphia, Pa.
Parks-Cramer Co., Fitchburg, Mass.
Peabody Engineering Corp., New York, N. Y.
Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Sarcotherm Controls, Inc., New York, N. Y.
Struthers Wells Corp., Warren, Pa.
Trent, Inc., Philadelphia, Pa.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
Wiegand Co., Edwin L., Pittsburgh, Pa. (electric)

SYSTEMS, ROOF SPRAYING (FOR COOLING ROOFS)

April Showers Div., Swartwout Fabricators, Inc., Kokomo, Ind.
Bete Fog Nozzle Inc., Greenfield, Mass.
Binks Mfg. Co., Chicago, Ill.
Muellermist Irrigation Co., Maywood, Ill.
Ruppright's Rotary Roof Cooler, Los Angeles.
Spray Engineering Co., Burlington, Mass.
Spraying Systems Co., Bellwood, Ill.
Water Cooling Corp., New York, N. Y.

TABLES, BENDING, PIPE

American Pipe Bending Machine Co., Inc., Poultney, Vt.

TACHOMETERS

Boulin Instrument Corp., Pelham, N. Y.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
EPIC, Inc., New York, N. Y.
Foxboro Co., Foxboro, Mass.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hill & Co., E. Vernon, Lake Geneva, Wis.

TAGS, VALVE, FOR IDENTIFYING VALVES

Acromark Co., Elizabeth, N. J.
Atlantic Engravers, Wilmington, Vt.
Better Engineered Controls, Los Angeles.
Chase Brass & Copper Co., Waterbury, Conn.
Meyer & Wenthe, Inc., Chicago, Ill.
Seton Name Plate Co., Inc., New Haven, Conn.

TANK CLEANING COMPOUNDS

See Compounds, Cleaning, Tank

TANK FITTINGS

See Fittings and Bushings, Fuel Oil Tank; Alarms, Liquid Level

TANK HEADS

See Parts, for Heating and Air Conditioning Equipment

TANK LININGS

See Coating, Protective, for Metals

TANKS, BLOWOFF

Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Bigelow Co., The, New Haven, Conn.
Birchfield Boiler, Inc., Tacoma, Wash.
Bros Inc., Minneapolis, Minn.
Buffalo Tank Corp., Dunellen, N. J.
Caldwell Co., W. E., Louisville, Ky.
Chicago Steel Tank Co., Div. of U. S. Industries, Inc., Chicago, Ill.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
Ellicott Fabricators, Inc., Baltimore, Md.
Finnigan & Co., Inc., J. J., Atlanta, Ga.
Gabriel Boiler Co., Portland, Ore.
Hodge Boiler Wks., East Boston, Mass.
Hoppes Mfg. Co., Inc., Springfield, O.
International Boiler Works Co., The, East Stroudsburg, Pa.
Johnson Bros., Inc., Ferrysburg, Mich.
Koven & Bro. Inc., L. O. Dover, N. J.
Lucey Alloy Products Corp., Chattanooga, Tenn.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis.
Morrison Brothers Co., Dubuque, Ia.
Nooter Corp., St. Louis, Mo.
Old Dominion Iron & Steel Corp., Richmond, Va.
Parker Boiler Mfg. Co., Sid. E., Los Angeles, Calif.
Patterson-Kelley Co., Inc., East Stroudsburg, Pa.
Quaker City Iron Wks., Philadelphia, Pa.
Queen City Engineering Co., Charlotte, N.C.
Reco Products Div., Recony Corp., New York, N. Y.
Richmond Engineering Co., Richmond, Va.
Terre Haute Boiler Works Co., Terre Haute, Ind.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
Water Tube Boiler & Tank Co., Chicago, Ill.

TANKS, EXPANSION, FOR HOT WATER HEATING SYSTEMS

Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
American Tube & Controls, Inc., West Warwick R. I.
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Bell & Gossett Co., Morton Grove, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Biggs Boiler Works Co., E. Akron, O.
Birchfield Boiler, Inc., Tacoma, Wash.
Buffalo Tank Corp., Dunellen, N. J.
Caldwell Co., W. E., Louisville, Ky.
Chicago Steel Tank Co., Div. of U. S. Industries, Inc., Chicago, Ill.
Ellicott Fabricators, Inc., Baltimore, Md.
Finnigan & Co., Inc., J. J., Atlanta, Ga.
Gabriel Boiler Co., Portland, Ore.
General Automatic Products Corp., Baltimore, Md.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
International Boiler Works Co., The, East Stroudsburg, Pa.
Koven & Bro. Inc., L. O., Dover, N. J.
Morrison Brothers Co., Dubuque, Ia.
Old Dominion Iron & Steel Corp., Richmond, Va.
Parker Boiler Mfg. Co., Sid. E., Los Angeles.
Patterson-Kelley Co., Inc., East Stroudsburg, Pa.
Quaker City Iron Wks., Philadelphia, Pa.
Queen City Engineering Co., Charlotte, N.C.
Raypak Co., Inc., El Monte, Calif.
Reco Products Div., Recony Corp., New York, N. Y.
Rheem Mfg. Co., Chicago, Ill.
Richmond Engineering Co., Richmond, Va.
Thrush & Co., H. A., Peru, Ind.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Union Iron Works, Div. of Riley Stoker Corp., Erie, Pa.
Water Tube Boiler & Tank Co., Chicago, Ill.
Western Blower Co., Seattle, Wash.
Wood Co., John, Conshohocken, Pa.

TANKS, PROCESS AND STORAGE

Acme Welding, Div. of the United Tool & Die Co., West Hartford, Conn.
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Alco Products, Inc., Schenectady, N. Y.
Allcraft Mfg. Co., Inc., Cambridge, Mass.
Aluminum Co. of America, Pittsburgh, Pa.
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber lined)
American Meter Co., Pump Div., Philadelphia, Pa.
Apex Reinforced Plastics, Cleveland, O.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Argo Plastic Products, Cleveland, O.
Atlas Mineral Products Co., Mertztown, Pa.
Barnstead Still & Sterilizer Co., Boston, Mass.
Beaird Co., J. B., Shreveport, La.
Bell & Gossett Co., Morton Grove, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Bigelow Co., New Haven, Conn.
Biggs Boiler Wks. Co., E. Akron, O.
Binks Mfg. Co., Chicago, Ill.
Birchfield Boiler, Inc., Tacoma, Wash.
Bishopric Products Co., Cincinnati, O.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bros Inc., Minneapolis, Minn.
Buffalo Tank Corp., Dunellen, N. J.
Caldwell Co., W. E., Louisville, Ky.
Chicago Bridge & Iron Co., Chicago, Ill.
Chicago Metal Mfg. Co., Chicago, Ill.
Chicago Steel Tank Co., Div. of U. S. Industries, Inc., Chicago, Ill.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Corite-Reynolds Corp., Des Plaines, Ill. (plastic)
David-Ludwig Co., Detroit, Mich.
Day Co., The, Minneapolis, Minn.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Dillon Steam Boiler Wks., Inc., D. M., Fitchburg, Mass.

Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Downingtown, Pa.
DuVerre, Inc., Buffalo, N. Y. (plastic)
Elastic Porcelain Lining Corp., Rochester, N. Y. (Tank linings)
Electro-Chemical Products Corp., Cleveland, O. (PVC plastic; lined or self-supporting)
Ellicott Fabricators, Inc., Baltimore, Md.
Erie City Iron Wks., Erie, Pa.
Falstrom Co., Passaic, N. J.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
Finnigan & Co., Inc., J. J., Atlanta, Ga.
Frick Co., Waynesboro, Pa.
Gabriel Boiler Co., Portland, Ore.
Galloway Co., G. W., Arcadia, Calif.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (chemical stoneware, plastic, and porcelain)
General Fittings Co., East Greenwich, R. I.
Goodrich Industrial Products Co., Akron, O. (Rubber lined)
Hanson Equipment Co., Beloit, Wis. (plastic)
Hartell, Inc., Warminster, Pa.
Haveg Industries, Inc., Wilmington, Del.
Heil Process Equipment Corp., Cleveland, Ohio
Hodge Boiler Works, East Boston, Mass.
Hoppes Mfg. Co., Inc., Springfield, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
International Boiler Wks., The, East Stroudsburg, Pa.
International Engineering, Inc., Dayton, O.
Kargard Co., The, Marinette, Wis.
Kaustine Furnace & Tank Corp., Perry, N. Y.
Kirk & Blum Mfg. Co., Cincinnati, O.
Knapp Mills, Inc., Long Island City, N. Y.
Knight Co., Maurice A., Akron, O. (acid-proof, lined steel)
Kopperman & Sons, Inc., Joseph, Philadelphia, Pa.
Koven & Bro. Inc., L. O., Dover, N. J.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rubber PVC lined)
Lead Lined Iron Pipe Co., Wakefield, Mass. (lead lined and all lead)
Littleford Bros. Inc., Cincinnati, O.
Lucey Alloy Products Corp., Chattanooga, Tenn.
Manitowoc Shipbuilding, Inc., Manitowoc, Wis.
Mesker Steel Corp., Geo. L., Evansville, Ind.
Metalweld, Inc., Industrial Maintenance Div., Philadelphia, Pa.
Morrison Brothers Co., Dubuque, Ia.
Newcomb-Detroit Co., Detroit, Mich.
Nooter Corp., St. Louis, Mo.
Old Dominion Iron & Steel Corp., Richmond, Va.
Parker Boiler Mfg. Co., Sid. E., Los Angeles, Calif.
Patterson-Kelley Co., Inc., The, East Stroudsburg, Pa.
Pittsburgh Plate Glass Co., Pittsburgh, Pa. (glass)
Portland Copper & Tank Works, Inc., South Portland, Me.
Process Engineering, Inc., Methuen, Mass.
Quaid Fabrications, Inc., Palmyra, N. J.
Quaker City Iron Wks., Philadelphia, Pa.
Quelcor, Inc., Chester, Pa.
Queen City Engineering Co., Charlotte, N. C.
Raypak Co., Inc., El Monte, Calif.
Reco Products Div., Recony Corp., New York, N. Y.
Rheem Mfg. Co., Chicago, Ill.
Richmond Engineering Co., Richmond, Va.
Rosebraugh Co., W. W., Salem, Ore.
Roth Co., Roy E., Rock Island, Ill.
S & C Mfg. Co., Cincinnati, O. (plastics)
Schneible Co., Claude B., Detroit, Mich.
Sims Co., Erie, Pa.
Smith Corp., A. O., Milwaukee, Wis.
Spurgeon Co., Warren, Mich.
Structural Fibers, Inc., Chardon, O. (plastic fiberglass reinforced)
Struthers Wells Corp., Warren, Pa.
Terre Haute Boiler Works Co., Terre Haute, Ind.
United Sheet Metal Co., Inc., Columbus, O.
United States Rubber Co., New York, N. Y.
United States Stoneware Co., New York.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Van Noorden Co., E., Boston, Mass.
Water Tube Boiler & Tank Co., Chicago, Ill.
Western Blower Co., Seattle, Wash.
Whitlock Mfg. Co., W. Hartford, Conn.
Wood Co., John, Conshohocken, Pa.
Youngstown Welding & Engineering Co., Youngstown, O.
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.

TAPE, DUCT, ADHESIVE, FOR SEALING JOINTS

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Adhesive Tape Corp., Brooklyn, N. Y.
Arno Adhesive Tapes, Inc., Michigan City, Ind.
Cain Mfg. Inc., Birmingham, Ala.
Continental Tapes, Cayce, S. C.
Corbman Brothers, Inc., Philadelphia, Pa.
Durkee-Atwood Co., Minneapolis, Minn.
Duro-Dyne Corp., Farmingdale, Long Island, N. Y.
Elgen Mfg. Co., Long Island City, N.Y.
Goodrich Industrial Products Co., B. F., Akron, O.
Grant Wilson, Inc., Chicago, Ill.
Industrial Tape Div., Hampton Mfg. Co., New Rochelle, N. Y.
Johns-Manville Corp., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Kendall Co., Polyken Sales Div., Chicago, Ill.
Miracle Adhesives Corp., Bellmore, N. Y.
Mortell Co., J. W., Kankakee, Ill.
Mystik Adhesive Products, Inc., Chicago, Ill.
Permacel, New Brunswick, N. J.
Products Research Co., Burbank, Calif.
Seamless Rubber Co., The, Industrial Tape Div., New Haven, Conn.
Shuford Mills, Inc., Hickory, N.C.
Technical Tape Corp., New Rochelle, N. Y.
Tropical Tape Div., Ft. Lauderdale, Fla.
West American Rubber Co., Los Angeles, Calif.

TAPE, INDUSTRIAL, ADHESIVE

Acme Asbestos Covering & Flooring Co., Chicago, Ill.
Adhesive Tape Corp., Brooklyn, N. Y.
Arno Adhesive Tapes, Inc., Michigan City, Ind.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
By-Buk Co., Los Angeles, Calif.
Cain Mfg. Inc., Birmingham, Ala.
Continental Hard Rubber Co., New Haven, Conn.
Continental Tapes, Cayce, S. C.
Corbman Bros., Inc., Philadelphia, Pa.
Dayco Corp., Dayton, O.
Dayton Industrial Products Co., Melrose Park, Ill.
Durkee-Atwood Co., Minneapolis, Minn.
Flexrock Co., Philadelphia, Pa.
Gerrard & Co., A. J., Des Plaines, Ill.
Goodrich Industrial Products Co., Akron, O.
Grant Wilson, Inc., Chicago, Ill.
Johns-Manville Corp., New York, N. Y.
Kendall Co., Polyken Sales Div., Chicago, Ill.
Labelon Tape Co., Inc., Rochester, N. Y.
Minnesota Mining & Mfg. Co., St. Paul. Minn.
Mystik Adhesive Products, Inc., Chicago, Ill.
New York Belting & Packing Co., Passaic, N. J.
Norton Co., Worcester, Mass.
Pam Narrow Fabrics Co., Oceanside, N. Y. (asbestos for pipe wrappings)
Pee Cee Tape & Label Co., Los Angeles, Calif. (Printed)
Permacel, New Brunswick, N. J.
Porter Co., Inc., H. K., Thermoid Div., Philadelphia, Pa.
Rubber & Plastics Compound Co., New York, N. Y. (vinyl)
Seamless Rubber Co., The, Industrial Tape Div., New Haven, Conn.
Shuford Mills, Inc., Hickory, N.Y.
Tropical Tape Div., Ft. Lauderdale, Fla.
United Mineral & Chemical Corp., New York.
United States Rubber Co., New York, N. Y.
West American Rubber Co., Los Angeles, Calif.

TAPE, PIPE JOINT SEALANT

Chemetrol, Plastic Piping Systems Equipment, Santa Ana, Calif.
Chemo Products Inc., W. Warwick, R. I.
Hitemp Wires, Inc., Westbury, N.Y.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Permacel, New Brunswick, N.J.
West American Rubber Co., Los Angeles, Calif.

TAPS, PIPE

Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Landis Machine Co., Inc., Waynesboro, Pa.
Nye Tool Co., Chicago, Ill.
Threadwell Tap & Die Co., Greenfield, Mass.

TEES, SADDLE

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Baker & Co., R. H., Los Angeles, Calif.
Bonney Forge & Tool Wks., Allentown, Pa.
Canton Stoker Corp., Canton, O.
Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Elkhart Products Corp., Elkhart, Ind.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
O.T.M. Corp., Houston, Tex.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.
Sall Bros. Co., Rockford, Ill.
Skinner Co., M. B., South Bend, Ind.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Forge & Pipe Works, Chicago, Ill.
Tube Turns Div. of Chemetron Corp., Louisville, Ky. (welding)

TELESCOPES, FOR INSPECTING PIPE AND OTHER EQUIPMENT

A.C.M.I. Borescope Div., American Cystoscope Makers, Inc., Pelham Manor, N. Y.
Eder Instrument Co., Chicago, Ill.

TELEVISION, INDUSTRIAL, CLOSED-CIRCUIT

Diamond Power Specialty Corp., Lancaster, O.
Radio Corp. of America, Industrial Electronic Products, Camden, N. J.

TEMPERATURE AND HUMIDITY CONTROLS

See Humidistats; Recorder-Controllers; Thermostats; Regulators, Temperature

TEMPERATURE RECORDERS

See Recorders, Temperature

TEMPERATURE REGULATORS

See Regulators, Temperature

TEMPLATES, DRAWING, PIPING

Alco Products, Inc., Schenectady, N. Y.
Dietzgen Co., Eugene, Chicago, Ill.
Graphic Indicator Co., Los Angeles, Calif. (indicators for valves, piping)

TEST CHAMBERS

See Chambers, Test, Controlled Temperature and Humidity

TESTERS, DUST SPOT, FOR AIR FILTERS

Gelman Instrument Co., Chelsea, Mich.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Research Appliance Co., Allison Park, Pa.
Royco Instrument, Palo Alto, Calif.
Trerice Co., H. O., Detroit, Mich.

TESTERS, GAGE, DEAD WEIGHT

American Instrument Co., Inc., Silver Spring, Md.
Crosby Valve & Gage Co., Wrentham, Mass.
Dynametrics Corp., Burlington, Mass.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mansfield & Green, Inc., Cleveland, O.
Trerice Co., H. O., Detroit, Mich.

TESTERS, LEAK, FOR PIPING AND VESSELS

Airserco Mfg. Co., Pittsburgh, Pa.
American Gas & Chemical, Inc., Leak-Tec Div., New York, N. Y.

Chicago Forging and Mfg. Co., Chicago, Ill.
Dudgeon, Inc., Richard, Brooklyn, N. Y.
Farris Engineering Co., Palisades Park, N. J.
Greer Hydraulics, Inc., Los Angeles, Calif.
Mechanical Products Corp., Chicago, Ill.
Universal Controls Corp., Dallas, Tex.
Whittington Pump & Engineering Corp., Indianapolis, Ind.

TESTERS, MOISTURE

Brabender Corp., Rochelle Park, N. J. (semi-automatic)
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Hill & Co., E. Vernon, Lake Geneva, Wis.
McIntire Co., The, Livingston, N.J.

TESTERS, SMOKE

Bacharach Industrial Instrument Co., Pittsburgh, Pa.
De-Tec-Tronic Corp., Chicago, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Gelman Instrument Co., Chelsea, Mich.
Kilgore, Inc., International Flare-Signal Div., Westerville, O.
McNeill Smoke Eliminator Co., Chicago, Ill.
Research Appliance Co., Allison Park, Pa.
Robinair Mfg. Corp., Montpelier, O.

TESTERS, SOUND, FOR LOCATING MECHANICAL TROUBLES

Airserco Mfg. Co., Pittsburgh, Pa.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Scott, Inc., H. H., Inst. Div., Maynard, Mass.

THAWERS, PIPE, ELECTRIC, PORTABLE

Fern, Ralph, Scranton, Pa.
Hammett Electric Co., Kansas City, Kans.
Harold Electric Co., Walla Walla, Wash.
Hobart Bros. Co., Troy O.
Trindl Products, Ltd., Chicago, Ill.

THERMOELECTRIC DEVICES FOR AIR CONDITIONING

See Devices, Thermoelectric, for Air Conditioning

THERMOMETER WELLS

See Wells, Thermometer

THERMOMETERS, INDICATING, INDUSTRIAL

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Dickson Co., The, Chicago, Ill.
Dillon & Co., Inc., W. C., Van Nuys, Calif.
Electric Autolite Co., Toledo, O.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
G. M. Mfg. Co., New York, N. Y.
Garden City Instruments, Inc., Evanston, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
H-B Instrument Co., Philadelphia, Pa.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Industrial Service Co., Providence, R.I.
Johnson Service Co., Milwaukee, Wis.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.
Moeller Instrument Co., Richmond Hill, N. Y.
New York Air Valve Corp., Brooklyn, N. Y.
Pacific Transducer Corp., Los Angeles, Calif. (for surface temperatures)
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Partlow Corp., The, New Hartford, N. Y.
Philadelphia Thermometer Co., Philadelphia.
Powers Regulator Co., Skokie, Ill.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Preferred Utilities Mfg. Corp., New York.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Royco Instruments, Palo Alto, Calif.
Sarco Co., Inc., New York, N. Y.
Schaevitz Engineering, Camden, N. J.
Scientific Instrument Co., Detroit, Mich.
Simpson Electric Co., Chicago, Ill.
Tagliabue Div., Marshalltown Mfg., Inc., Marshalltown, Ia.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
United Instrument Co., Brooklyn, N. Y.
United States Gauge Div. of America Machine and Metals, Inc., Sellersville, Pa.
Victory Engineering Corp., Union, N. J.
Weiss & Son, Inc., Albert A., Brooklyn, N. Y.
Weksler Instruments Corp., Freeport, L. I., N. Y.
West Instrument Corp., Chicago, Ill.
Yellow Springs Instrument Co., Inc., Yellow Springs, O.

THERMOMETERS, INDICATING, PIPE SURFACE TEMPERATURE

Airserco Mfg. Co., Pittsburgh, Pa.
Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.
Ameresco, Inc., Little Falls, N. J.
Bristol Co., The, Waterbury, Conn.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Moeller Instrument Co., Richmond Hill, N. Y.
Pacific Transducer Corp., Los Angeles, Calif.
Palmer Thermometers, Inc., Cincinnati, O.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Royco Instruments, Palo Alto, Calif.
Simpson Electric Co., Chicago, Ill.
Trerice Co., H. O., Detroit, Mich.
Victory Engineering Corp., Union, N. J.
West Instrument Corp., Chicago, Ill.
Yellow Springs Instrument Co., Inc., Yellow Springs, O.

THERMOMETERS, INDICATING, REMOTE-READING

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
Airguide Instrument Co., Chicago, Ill.
Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.
Atkins Technical, Inc., Cleveland, O.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Century Instrument Co., Detroit, Mich.
Daystrom, Inc., Weston Instruments Div., Newark, N.J.
Dickson Co., The, Chicago, Ill.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.
Electric Autolite Co., Toledo, O.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Garden City Instruments, Inc., Evanston, Ill.
General Controls Co., Glendale, Calif.
Giannini & Co., Inc., G. M., Pasadena, Calif.
H-B Instrument Co., Philadelphia, Pa.
Industrial Development Laboratories, Inc., Edgewater, N. J.
Johnson Service Co., Milwaukee, Wis.
Leeds & Northrup Co., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.
Minneapolis-Honeywell Regulator Co., Minnapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Moore Products Co., Philadelphia, Pa.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Philadelphia Thermometer Co., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Royco Instruments, Palo Alto, Calif.
Sarco Co., Inc., New York, N. Y.
Scientific Instrument Co., Detroit, Mich.
Simpson Electric Co., Chicago, Ill.
Taylor Instrument Companies, Rochester, N. Y.
Thompson Research & Mfg. Co., Davenport, Fla.
Thwing-Albert Instrument Co., Philadelphia, Pa.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Victory Engineering Corp., Union, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.
West Instrument Corp., Chicago, Ill.
Yellow Springs Instrument Co., Inc., Yellow Springs, O.

THERMOMETERS, INDICATING, WALL

Airguide Instrument Co., Chicago, Ill.
Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.
Barber-Colman Co., Rockford, Ill.
Bristol Co., The, Waterbury, Conn.
Dickson Co., The, Chicago, Ill.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N.J.
Electric Autolite Co., Toledo, O.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
G. M. Mfg. Co., New York, N. Y.
Garden City Instruments, Inc., Evanston, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
H-B Instrument Co., Philadelphia, Pa.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Philadelphia Thermometer Co., Philadelphia, Pa.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Scientific Instrument Co., Detroit, Mich.
Taylor Instrument Companies, Rochester, N. Y.
Thwing-Albert Instrument Co., Philadelphia, Pa.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
Victory Engineering Corp., Union, N. J.
Weksler Instruments Corp., Freeport, L. I., N. Y.
West Instrument Corp., Chicago, Ill.

THERMOMETERS, KATA

Hill & Co., E. Vernon, Lake Geneva, Wis.

THERMOSTATIC BELLOWS

See Bellows, Thermostatic and Metallic

THERMOSTATIC BI-METALS

See Bi-Metals, Thermostatic

THERMOSTATIC TRAPS

See Traps, Steam, Thermostatic

THERMOSTAT GUARDS

See Guards, Thermostat, to Prevent Tampering

THERMOSTATS, DUCT TYPE

American District Telegraph Co., New York.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Barber-Colman Co., Rockford, Ill.
Burling Instrument Co., Air Conditioning Div., Chatham, N. J.
Cam-Stat, Inc., Div. of The Paul Henry Co., Los Angeles, Calif.
Fenwal Inc., Ashland, Mass.
General Controls Co., Glendale, Calif.
Johnson Service Co., Milwaukee, Wis.
Leslie Co., Lyndhurst, N. J.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minne-

apolis, Minn.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Stevens Mfg. Co., Inc., Mansfield, O.
Therm-O-Disc, Inc., Mansfield, O.
United Electric Controls Co., Watertown, Mass.
Vapor Heating Corp., Chicago, Ill.
Wesix Electric Heater Co., San Francisco.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.

THERMOSTATS, EFFECTIVE TEMPERATURE

Johnson Service Co., Milwaukee, Wis.
Sarcotherm Controls, Inc., New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Wilcolator Co., Elizabeth, N. J.

THERMOSTATS, IMMERSION

American-Standard Controls Div., Detroit, Mich.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Barber-Colman Co., Rockford, Ill.
Burling Instrument Co., Air Conditioning Div., Chatham, N. J.
Deutsch Controls Corp., Los Angeles, Calif.
Fenwal Inc., Ashland, Mass.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Shelbyville, Ind.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
H-B Instrument Co., Philadelphia, Pa.
Hart Mfg. Co., Hartford, Conn.
Johnson Service Co., Milwaukee, Wis.
Leslie Co., Lyndhurst, N. J.
Mechanical Industries Production Co., Akron, O.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Penn Controls, Inc., Goshen, Ind.
Philadelphia Thermometer Co., Philadelphia.
Powers Regulator Co., Skokie, Ill.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Texas Instruments Inc., Metals & Controls Div., Attleboro, Mass.
Therm-O-Stats Inc., Chartley, Mass.
United Electric Controls Co., Watertown, Mass.
Vapor Heating Corp., Chicago, Ill.
Wesix Electric Heater Co., San Francisco, Calif.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wilcolator Co., Elizabeth, N. J.

THERMOSTATS, RADIANT HEAT

American Time Products, Inc., Woodside, N. Y.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Berko Electric Mfg. Co., Jamaica, N. Y.
Ceilheat, Inc., Knoxville, Tenn.
Everwarm, Inc., Knoxville, Tenn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
General Electric Co., Wiring Device Dept., Electric Comfort Heating Section, Louisville, Ky.
Mechanical Industries Production Co., Akron, O.
Mercoid Corp., The, Chicago, Ill.
Penn Controls, Inc., Goshen, Ind.
Roberson, Inc., Seattle, Wash.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Scaico Controls Inc., Delanco, N. J.
Sunwarm, Inc., Kingsport, Tenn.
Wesix Electric Heater Co., San Francisco, Calif.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.

THERMOSTATS, ROOM OR WALL

Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
American-Standard Controls Div., Detroit, Mich.
Arvin Industries, Inc., Columbus, Ind.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Barber-Colman Co., Rockford, Ill.
Baso, Inc., Milwaukee, Wis.
Cam-Stat, Inc., Div. of The Paul Henry Co., Los Angeles, Calif.
Ceilheat, Inc., Knoxville, Tenn.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Crown Controls Co., Inc., New Bremen, O.
Delco Appliance Div., General Motors Corp., Rochester, N.Y.
Everwarm, Inc., Knoxville, Tenn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Appliance Control Dept., Morrison, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Iron Fireman Mfg. Co., Cleveland, O.
Johnson Service Co., Milwaukee, Wis.
Kingston National Controls Div., Kingston Industries, Inc., Medfield, Mass.
McCorkle Co., D. H., Berkeley, Calif.
Mears Electric Controls, Inc., Portland, Ore.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Roberson Inc., Seattle, Wash.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Signet Controls, Portland, Ore.
Tennessee Plastics, Inc., Johnson City, Tenn.
Triplex Heating Specialty Co., Inc., Peru, Ind.
United Electric Controls Co., Watertown, Mass.
Vapor Heating Corp., Chicago, Ill.
Wesix Electric Heater Co., San Francisco.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wilcolator Co., Elizabeth, N. J.
Zell-Aire Corp., Reading, Pa.

THERMOSTATS, SURFACE

American-Standard Controls Div., Detroit, Mich.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Barber-Colman Co., Rockford, Ill.
Cam-Stat, Inc., Div. of The Paul Henry Co., Los Angeles, Calif.
Cox & Co., Inc., New York, N. Y.
Fenwal Inc., Ashland, Mass.
General Controls Co., Glendale, Calif. and Skokie, Ill.
Hart Mfg. Co., Hartford, Conn.
Johnson Service Co., Milwaukee, Wis.
McCorkle Co., D. H., Berkeley, Calif.
Mears Electric Controls, Inc., Portland, Ore.
Mechanical Industries Production Co., Akron, O.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Penn Controls, Inc., Goshen, Ind.
Red Spot Electric Co., Tacoma, Wash.
Roberson Inc., Seattle, Wash.
Sarco Co., Inc., New York. N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Stevens Mfg. Co., Inc., Mansfield, O.
Texas Instruments Inc., Metals & Controls Div., Attleboro, Mass.
Therm-O-Disc, Inc., Mansfield, O.
Therm-O-Stats, Inc., Chartley, Mass.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Tube Forgings of America, Inc., Portland, Ore.
United Electric Controls Co., Watertown, Mass.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.
Wilcolator Co., Elizabeth, N. J.

THERMOSTATS, TWO STAGE, FOR COOLING

Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa. (multistage, 2 to 10 stage)
Barber-Colman Co., Rockford, Ill.
General Controls Co., Glendale, Calif.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Penn Controls, Inc., Goshen, Ind.
Ranco Incorporated, Columbus, O.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.

THERMOSTATS, TWO STAGE, FOR HEATING

Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa. (multistage, 2 to 10 stage)
Barber-Colman Co., Rockford, Ill.
General Controls Co., Glendale, Calif.
Mears Electric Controls, Inc., Portland, Ore.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Ranco Incorporated, Columbus, O.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Wiegand Co., Edwin L., Pittsburgh, Pa.

THERMOSTATS, TWO TEMPERATURE OR DUAL

American-Standard Controls Div., Detroit, Mich.
Armstrong Co., C. E., Gladstone, Ore.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Barber-Colman Co., Rockford, Ill.
Burling Instrument Co., Air Conditioning Div., Chatham, N. J.
Fenwal Inc., Ashland, Mass.
Franklin Dales Co., Akron, O.
General Controls Co., Glendale, Calif. and Skokie, Ill.
H-B Instrument Co., Philadelphia, Pa.
Iron Fireman Mfg. Co., Cleveland, O.
Johnson Service Co., Milwaukee, Wis.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
Ranco Incorporated, Columbus, O.
Roberson Inc., Seattle, Wash.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
United Electric Controls Co., Watertown, Mass.
Vapor Heating Corp., Chicago, Ill.
White-Rodgers Co., St. Louis, Mo.
Wiegand Co., Edwin L., Pittsburgh, Pa.

THERMOSTATS, WEATHER COMPENSATING

Au-Temp-Co Corp., New York, N. Y.
Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Barber-Colman Co., Rockford, Ill.
Clark-Cooper Co., Inc., CC Pump Div., Palmyra, N. J.
Crown Controls Co., Inc., New Bremen, O.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Electric Co., Appliance Control Dept., Morrison, Ill.
Heat-Timer Corp., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
United Electric Controls Co., Watertown, Mass.
White-Rodgers Co., St. Louis, Mo. (Level-Temp)

THREADERS, PIPE

See Stocks and Dies

TIME RECORDER-TOTALIZERS

See Recorder-Totalizers, Time

TIME SWITCHES

See Switches, Time

TONGS, PIPE

Armstrong Bros. Tool Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Chicago Specialty Mfg. Co., Chicago, Ill.
Mathey Machine Works, Inc., C. A., Tulsa, Okla.
Price & Rutzebeck, Hayward, Calif.
Schick Products, Inc., Belmont, Calif.
Williams & Co., J. H., Buffalo, N. Y.

TOOLS (CHISELS, PLIERS, ETC.)

Adre Co., The, Milwaukee, Wis. (burnishers for electrical contacts)
Ampco Metal, Inc., Milwaukee, Wis.
Atkins Saw Div., Borg-Warner Corp., Greenville, Miss. (hack saws, hand saws, plumber's saws, files)
Badger Sales Co., Inc., Los Angeles, Calif. (magnifying inspectoscope for inspection of hard-to-get-at places)
Basford Co., H. R., San Francisco, Calif. (pliers)
Bestt Rollr Co., Fond du Lac, Wis. (applicator for painting pipe lines)
Billings & Spencer Co., Hartford, Conn.
Birks Mfg. Co., Meriden, Conn. (Pittsburgh lock seam opener)
Black & Decker Mfg. Co., The, Towson, Md. (electric screw driver)
Bonney Forge & Tool Works, Allentown, Pa.
Boston Machine Works Co., Lynn, Mass. (nozzle extractor)
Bostitch, Inc., East Greenwich, R. I. (staplers and stitchers)
Brown-Brockmeyer Co., Inc., Dayton, O. (tool grinders)
Buckeye Tools Corp., Dayton, O. (Portable air wrenches and sheet metal nibblers)
Caliputer, Rancho Sante Fe, Calif. (Caliper-scale)
Cam-Lok Div., Empire Products, Inc., Cincinnati, O. (electrode holders)
Carlson Rules Works, Disston Div., H. K. Porter Co. (Delaware)
Champion-DeArment Tool Co., Meadville, Pa. (pliers, hammers)
Crescent Tool Co., Jamestown, N. Y.
Demo-Haines Tool Corp., Machine Works, El Segundo, Calif. (portable rotary hammer & drills)
Diamond Tool & Horseshoe Co., Duluth, Minn. (wrenches)
Dreier Brothers, Inc., Chicago, Ill. (level for determining pitch of pipe; hack saws)
Duro-Dyne Corp., Farmingdale, L. I., N. Y. (file handles and solder iron handles, punches)
Duro Metal Products Co., Chicago, Ill.
Engesser & Co., William L., El Monte, Calif. (bull bits, angle drill attachment)
Erie Tool Wks., Erie, Pa. (Vises, cutter wheels, rollers)
Fairmount Tool & Forging, Inc., Cleveland.
Fastening Devices, Inc., Brooklyn, N. Y. (stud driver)
Fastway Fasteners, Inc., Lorain, O. (for hanging duct straps, heating units, etc. on masonry walls)
Frankell Mfg. Co., Inc., Jersey City, N. J. (hermetic compressor opener)
Gel-Me Co., Bloomington, Ill. (electric sound probe for locating mechanical trouble)
Greene, Tweed & Co., North Wales, Pa.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., Rockford, Ill.
Hamer-Dril Co., New York, N.Y. (attachment for electric drill to make power hammer)
Hexdall Co., A. M., Morris, Ill. (Pittsburgh lock hammers, tee hammers, seam openers)
Hilti, Inc., Rapid Fastening Systems, Stamford, Conn. (hammer and power assisted drive tools)
Howes-Wood Co., Cambridge, Mass. (hacksaws, blades, handsaws)
Independent Blade Corp., Joliet, Ill. (plastic cutting & other saw blades)
Instrument Cases, Div. of TA Mfg. Corp., Los Angeles, Calif. (instrument cases)
Jaco Devices Co., Hingham, Mass. (drill attachment for sawing, etc.)
Kass Hardware & Supply Co., Inc., Bronx, N. Y. (drills for sheet metal)
Kent-Moore Organization, Inc., Warren, Mich.
Key-Hak Div., Producers & Distributors, Inc., Allentown, Pa. (hack saw blades for portable power hack saw)
Lenco, Inc., Jackson, Mo. (electrode holders)
Lenk Mfg. Co., Franklin, Ky. (electric soldering irons)
Levow, Inc., David, South Hackensack, N. J.
Lufkin Rule Co., Saginaw, Mich. (steel tapes and folding rules)
Matrix Engineering Corp., Minneapolis, Minn. (pneumatically operated nail driver for concrete, wood, sheet metal)
Millers Falls Co., Greenfield, Mass.
Milwaukee Electric Tool Corp., Milwaukee, Wis. (electric screw drivers and hack saws)
Misener Mfg. Co., Inc., Syracuse, N. Y. (hole saws)
Nielsen, Inc., E. V., Stamford, Conn.
Nupla Mfg. Co., Los Angeles, Calif. (hammers of all types)
Omega Products, Chicago, Ill. (pocket size voltage tester)
Owatonna Tool Co., Owatonna, Minn.
Owens Co., H., Culver City, Calif. (pattern developer tool for sheet metal work)
Petersen Mfg. Co., DeWitt, Nebr. (clamps)
Phillips Drill Co., Michigan City, Ind. (impact hammers)
Phillips Impact Swedging Tool Co., North Miami, Fla. (impact tools)
Pickett & Eckel, Inc., Alhambra, Calif. (slide rule)
Pioneer Tool Co., Racine, Wis. (scratch awls, crimping pliers, saw handles)
Pi Tape, Lemon Grove, Calif. (tape for measuring round duct)
Port City Machine & Tool Co., Muskegon, Mich. (for closing Pittsburgh Lock)
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
R C S Tool Corp., Bloomington, Ill. (reciprocating saw attachment; right angle drill attachments)
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., New Haven, Conn. (Powder-actuated tools, hammer)
Rawlplug Co., Inc., The, New Rochelle, N. Y. (drills for masonry)
Refrigeration Devices Co., Nutley, N. J. (oiler for refrigeration compressors)
Reiner & Campbell Co., Inc., Newark, N. J. (Dividers, drive cleat notchers; clip punch; swivel head squeezer tong)
Remington Arms Co., Inc., Bridgeport, Conn. (powder-actuated tools)
Richmont, Inc., Monrovia, Calif.
Rotary Concrete Drill Co., Pasadena, Calif. (Drill bits)
Rotor Tool Co., Cleveland, O.
Salsbury Corp., Los Angeles, Calif. (air hammer)
Scharf Mfg. Co., J. H., Omaha, Nebr. (magnesium levels)
Schild Mfg. Co., Beaver Dam, Wis.
Skinner Co., M. B., South Bend, Ind. (pipe drilling adapter)
Snap-on Tools Corp., Kenosha, Wis.
Stanley Electric Tools Div., The Stanley Works, New Britain, Conn.
Superior Pneumatic & Mfg. Co., Inc., Cleveland, O. (air hammer)
Superior Valve & Fittings Co., Pittsburgh, Pa. (wrenches, valving, hand)
Supersite Corp., Derby, Conn. (liquid tool for loosening rusted parts)
Thompson & Son Co., The Henry G., New Haven, Conn.
Truco Masonry Drilling Div., Wheel Trueing Tool Co., Detroit, Mich. (concrete drills)
Union Steel Chest Corp., LeRoy, N. J. (tool chests)
Walton Co., Hartford, Conn. (pipe and stud extractors)
Wassco Glo-Melt Div., American Electrical Heater Co., Detroit, Mich. (soldering pliers for copper tubing)
Watervliet Tool Co., Inc., Albany, N. Y. (air hammer, pneumatic sander)
Watsco, Inc., Hialeah, Fla. (hex wrench sets)
Williams & Co., J. H., Buffalo, N. Y.
Wodack Electric Tool Corp., Chicago, Ill. (hammers, electric; groovers, plaster)
Yeats Appliance Dolly Sales Co., Milwaukee, Wis. (dolly for moving equipment upstairs)
Zimmerman Packing, Cincinnati, O. (Gasket cutter)

TOOLS, FLARING, FOR TUBING

Anderson Metals Corp., Kansas City, Mo.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Bonney Forge & Tool Works, Allentown, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Pneumatic Tool Co., New York.
Chicago Specialty Mfg. Co., Chicago, Ill.
Duro Metal Products Co., Chicago, Ill.
Engesser & Co., William L., El Monte, Calif.
Erie Tool Works, Erie, Pa.
Fairmount Tool & Forging, Inc., Cleveland.
Fine Products Co., Berwyn, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Kent-Moore Organization, Inc., Warren, Mich.
Madden Brass Products Co., Aurora, Ill.
Miller Mfg. Co., St. Paul, Minn.
Mueller Brass Co., Port Huron, Mich.
Mueller Co., Decatur, Ill.
Nye Tool Co., Chicago, Ill.
Owatonna Tool Co., Owatonna, Minn.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Penn Brass & Copper Co., Erie, Pa.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Research Vacuum Supply Co., Chicago, Ill. (Press gears)
Robinair Mfg. Corp., Montpelier, O.
Sac Tool Mfg. Co., St. Louis, Mo.
Schaul Mfg. Co., Cleveland, Ohio
Snap-On Tools Corp., Kenosha, Wis.
Spanco Brass Sales, Allegan, Mich.
Talon Tools, Inc., North Arlington, N. J.
Wiedeke Co., The Gustav, Dayton, O.
Williams & Co., J. H., Buffalo, N. Y.
Wilson Co., K. R., Arcade, N. Y.
Wilson, Inc., Thomas C., Long Island City.
Wilson Manufacturing Co., Memphis, Tenn.

TORCHES, BRAZING SOLDERING AND WELDING

Aeroil Products Co., Inc., South Hackensack, N. J.
Aeroprojects, Inc., West Chester, Pa.
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Atlas Welding Accessories, Inc., Ferndale, Mich.
Bernz Co., Otto, Rochester, N. Y.
Borm Mfg. Co., Elgin, Ill.
Clayton & Lambert Mfg. Co., Louisville, Ky.
Dockson Corp., Detroit, Mich.
Ergolyte Mfg. Co., Philadelphia, Pa.
Eutectic Welding Alloys Corp., Fushing, N. Y.
General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.
Goss Gas, Inc., Glenshaw, Pa.
Harris Calorific Co., The, Cleveland, O.
Ideal Industries, Inc., Sycamore, Ill.
Insto-Gas Corp., Detroit, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Ia.
K-G Equipment Co., Allentown, Pa.
Lenk Mfg. Co., Franklin, Ky.
Lincoln Electric Co., The, Cleveland, O.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.
Mid-States Welder Mfg. Co., Chicago, Ill.
Minn-Kota Foundry & Mfg. Co., Moorhead, Minn.
Modern Engineering Co., St. Louis, Mo.
Mutual Liquid Gas & Equipment Co., Gardena, Calif.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Prepo Corp., Edgerton, Wis.
Ransome Torch & Burner Co., Emeryville, Calif.
Reiner & Campbell Co., Inc., Newark, N. J.
Research Vacuum Supply Co., Chicago, Ill.
Rexarc, Inc., W. Alexandria, O.
Sac Tool Mfg. Co., St. Louis, Mo.
Seelye Craftsmen, Inc., Minneapolis, Minn.
Selas Corp of America, Dresher, Pa.
Smith Welding Equipment Corp., Minneapolis.
Torit Mfg. Co., St. Paul, Minn.
Trindl Products, Ltd., Chicago, Ill.
Turner Corp., Sycamore, Ill.
Universal Cutting & Welding Equipment Mfg. Co., Ft. Lauderdale, Fla.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weldit, Inc., Detroit, Mich. (for L-P gas, also oxy-acetylene)

TOWERS, COOLING, ATMOSPHERIC DRAFT

American Cooling Tower Co., Kansas City, Mo.

Binks Mfg. Co., Chicago, Ill.
Fluor Products Co., Santa Rosa, Calif.
Koch Engineering Co., Inc., Wichita, Kans.
Lilie-Hoffmann Cooling Towers, Inc., St. Louis, Mo.
Marley Co., The, Kansas City, Mo.
Mason Products, Inc., Woburn, Mass.
Peerless Products Div., United Cooling Towers, Inc., N. Little Rock, Ark.
Phillips Cooling Tower Co., Inc., Brooklyn.
Pritchard & Co. of California, J. F., Kansas City, Mo.
Stewart Ice Machine Co., Pomona, Calif.
TOT Towers Co., Houston, Tex.
Toungate & Coats, Austin, Tex. (reinforced plastic)
Water Cooling Corp., New York, N. Y.
Water Cooling Equipment Co., St. Louis, Mo.

TOWERS, COOLING, MECHANICAL DRAFT

Acme Industries, Inc., Jackson, Mich.
Airtron Corp., Div. of the Higgins Metal Products Co., Swanton, O.
American Cooling Tower Co., Kansas City, Mo.
Arkla Air Conditioning Corp., Little Rock, Ark.
Baldwin Ward Mfg. Co., Inc., Ottawa, Ks.
Baltimore Aircoil Co., Inc., Baltimore, Md.
Binks Mfg. Co., Chicago, Ill.
Blazer Corp., Passaic, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Ceramic Cooling Tower Co., Div. Acme Brick Co., Ft. Worth, Tex.
Chrysler Corp., Airtemp Div., Dayton, O.
Curtis Mfg. Co., Refrigeration Div., St. Louis.
Deansteel Products Co., San Antonio, Tex.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Fiske Co., Chicago, Ill.
Fluor Products Co., Santa Rosa, Calif.
Foster Wheeler Corp., New York, N. Y.
Goodfellow Co., Inc., E. D., Memphis, Tenn.
Governair Corp., Oklahoma City, Okla.
Halstead & Mitchell, Pittsburgh, Pa.
Havens Cooling Towers, Div. of Havens Structural Steel Co., Kansas City, Mo.
Hindle Transformer Co., Inc., Flemington, N. J.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Krueger Air Conditioning Co., Tucson, Ariz.
Larkin Coils, Inc., Atlanta, Ga.
Lilie-Hoffmann Cooling Towers, Inc., St. Louis, Mo.
Marley Co., The, Kansas City, Mo.
Marlo Coil Co., St. Louis, Mo.
Mason Products, Inc., Woburn, Mass.
Master-Bilt Refrigeration Mfg. Co., St. Louis, Mo.
Mayer Refrigerating Engineers, Inc., Lincoln Park, N. J.
Morris Sheet Metal Works, Columbus, O.
Niagara Products Co., Phoenix, Ariz.
Peerless Products Div., United Cooling Towers, Inc., N. Little Rock, Ark.
Phillips Cooling Tower Co., Inc., Brooklyn, N. Y.
Pritchard & Co. of California, J. F., Kansas City, Mo.
Reco Products Div., Recony Corp., New York, N. Y.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
S & C Mfg. Co., Cincinnati, O.
Silvercraft, Inc., Louisville, Ky.
Sun-Fire Stoker Corp., New Albany, Ind.
Tedco Cooling Towers, Div. of Engineering & Development Co., Inc., St. Louis, Mo.
TOT Towers Co., Houston, Tex.
Toungate & Coats, Austin, Tex. (reinforced plastic)
Vogt Machine Co., Henry, Louisville, Ky. (packaged unit with condenser, pump, etc.)
Water Cooling Corp., New York, N. Y.
Water Cooling Equipment Co., St. Louis, Mo.
Wayne Cooling Equipment Co., Paterson, N. J.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.

TOWERS, COOLING, NOISE ELIMINATION FOR

See Noise Elimination for Cooling Towers

TRANSFORMERS, BOOST AND BUCK

(for voltage control)

Acme Electric Corp., Cuba, N. Y.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hindle Transformer Co., Inc., Flemington, N. J.
Jefferson Electric Co., Bellwood, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa.

TRANSFORMERS, ELECTRIC

Acme Electric Corp., Cuba, N. Y.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Arjac Products Inc., Rochester, N. Y.
Central Transformer Corp., Pine Bluff, Ark.
Crown Controls Co., Inc., New Bremen, O.
Dormeyer Industries, Chicago, Ill.
Eisler Engineering Co., Inc., Newark, N.J.
Essex Wire Corp., Ft. Wayne, Ind.
General Controls Co., Glendale, Calif., and Skokie, Ill.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Hammett Electric Co., Kansas City, Kans.
Jefferson Electric Co., Bellwood, Ill.
Kingston National Controls Div., Kingston Industries, Inc., Medfield, Mass.
Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Rex Welder Co., Benton Harbor, Mich.
Sangamo Electric Co., Springfield, Ill.
Schaevitz Engineering, Camden, N. J.
Sola Electric Co., Elk Grove, Ill. (voltage regulating)
Sperti Faraday, Inc., Adrian, Mich.
Taylor-Winfield Corp., Warren, O.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles.
Trindl Products, Ltd., Chicago, Ill.
Union Electric & Mfg. Co., Jersey City, N. J. (ignition)
Wagner Electric Corp., St. Louis, Mo.
Webster Electric Co., Racine, Wis. (oil burner)
Westinghouse Electric Corp., Pittsburgh, Pa.

TRANSMISSION DRIVES

See Drives, Chain, Flat Belt and V-Belt

TRANSMITTERS, FLOW

American Meter Co., Inc., Philadelphia, Pa.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barton Instrument Corp., Monterey Park, Calif.
B-I-F Industries, Builders-Providence Div., Providence, R.I.
Brooks Instrument Co., Inc., Hatfield, Pa.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Infilco, Inc., Tucson, Ariz.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
Moore Products Co., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.

TRANSMITTERS, PRESSURE AND TEMPERATURE

American Meter Co., Inc., Philadelphia, Pa.
Automatic Control Co., St. Paul, Minn.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barton Instrument Corp., Monterey Park, Calif.
B-I-F Industries, Builders-Providence Div., Providence, R.I.
Bristol Co., The, Waterbury, Conn.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
Giannini & Co., Inc., G. M., Pasadena, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Instruments, Inc., Tulsa, Okla.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan Div of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moore Products Co., Philadelphia, Pa.
Penn Instruments Div. of Burgess-Manning Co., Philadelphia, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
United States Gauge Div. of American Machine and Metals Inc., Sellersville, Pa.
Yarnall-Waring Co., Philadelphia, Pa.

TRAPS, MAGNETIC, FOR REMOVING TRAMP IRON FROM PIPE LINES

Columbia Engineering Service Co., Santa Rosa, Calif.
Dings Magnetic Separator Co., Milwaukee.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Zurn Industries, Inc., Erie, Pa.

TRAPS, STEAM, FLOAT-THERMOSTATIC

Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Armstrong Machine Wks., Three Rivers, Mich.
Bailey Co., Chas. M., San Francisco, Calif.
Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Cochrane Corp., Philadelphia, Pa.
Cryer Trap & Valve Div., Encor Corp., Belleville, N. J.
Davis Regulator Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Farris Engineering Corp., Palisades Park, N.J.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
L.R.P., Inc., Leicester, N. Y.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Modine Mfg. Co., Racine, Wis.
Monash-Younker Co., Inc., Chicago, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Owens & Co., Inc., Henry, Cranston, R. I.
Sarco Co., Inc., New York, N. Y.
Sellers Injector Corp., Philadelphia, Pa.
Squires Co., C. E., The, Cleveland, O.
Sterling Inc., Milwaukee, Wis.
Strong, Carlisle & Hammond, Conneaut, O.
Trane Co., LaCrosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.
Vis-A-Plug, Inc., King of Prussia, Pa.
Webster & Co., Warren, Camden, N. J.
Wright-Austin Co., Detroit, Mich.

TRAPS, STEAM, LIFT

Bailey Co., Charles M., San Francisco, Calif.
Clark Mfg. Co., Cleveland, O.
Morehead Moisture Control, Detroit, Mich.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling Engineering & Mfg. Corp., Hyde Park, Mass.
Strong, Carlisle & Hammond, Conneaut, O.
Velan Valve Corp., Plattsburgh, N. Y.

TRAPS, STEAM, MECHANICAL

Acker Corp., Meridian, Miss.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Armstrong Machine Wks., Three Rivers, Mich.
Bailey Co., Chas. M., San Francisco, Calif.
Boylston Steam Specialty Co., Chicago, Ill.
Burrows Mfg. Co., F. A., York, Pa.
Cashin Co., W. D., Boston, Mass.
Clark Mfg. Co., Cleveland, O.
Cochrane Corp., Philadelphia, Pa.
Coe Mfg. Co., Painesville, O.
Crane Co., Chicago, Ill.
Cryer Trap & Valve Div., Encor Corp., Belleville, N. J.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.

Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Kaye & MacDonald, Inc., West Orange, N. J.
L.R.P., Inc., Leicester, N. Y.
Leavitt Machine Co., Orange, Mass.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
McAlear Mfg. Co., Chicago, Ill.
McAuley Trap Co., Pittsburgh, Pa.
Monash-Younker Co., Inc., Chicago, Ill.
Morehead Moisture Control, Detroit, Mich.
Nason Co., Clarkston, Mich.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Perfecting Service Co., Charlotte, N. C.
Sarco Co., Inc., New York, N. Y.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Sterling Engineering & Mfg. Corp., Hyde Park, Mass.
Stickle Steam Specialties Co., Indianapolis.
Strong, Carlisle & Hammond, Conneaut, O.
Trane Co., The, LaCrosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Vapor Heating Corp., Chicago, Ill.
Vis-A-Plug, Inc., King of Prussia, Pa. (bucket only)
Watson & McDaniel Co., Philadelphia, Pa.
Webster & Co., Warren, Camden, N. J.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.
Wright-Austin Co., Detroit, Mich.
Yarnall-Waring Co., Philadelphia, Pa.

TRAPS, STEAM, PUMPING

Clark Mfg. Co., Cleveland, O.
Johnson Corp., The, Three Rivers, Mich.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling Engineering & Mfg. Corp., Hyde Park, Mass.
Strong, Carlisle & Hammond, Conneaut, O.

TRAPS, STEAM, RADIATOR

Barnes & Jones, Inc., Newtonville, Mass.
Dunham-Bush, Inc., West Hartford, Conn.
Hoffman Specialty Mfg. Corp., Indianapolis.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Modine Mfg. Co., Racine, Wis.
Monash-Younker Co., Inc., Chicago, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Trerice Co., H. O., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.
Webster & Co., Warren, Camden, N. J.

TRAPS, STEAM, THERMOSTATIC

Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.
Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Clark Mfg. Co., Cleveland, O.
Cryer Trap & Valve Div., Encor Corp., Belleville, N. J.
Dunham-Bush, Inc., West Hartford, Conn.
Farris Engineering Corp., Palisades Park, N.J.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
McAlear Mfg. Co., Chicago, Ill.
Modine Mfg. Co., Racine, Wis.
Monash-Younker Co., Inc., Chicago, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Powers Regulator Co., Skokie, Ill.
Riggio Co., Inc., Frank D., Rutherford, N. J.
Sarco Co., Inc., New York, N. Y.
Sellers Injector Corp., Philadelphia, Pa.
Squires Co., C. E., The, Cleveland, O.
Standard-Thompson Corp., Waltham, Mass.
Sterling, Inc., Milwaukee, Wis.
Sterling Engineering & Mfg. Corp., Hyde Park, Mass.
Strong, Carlisle & Hammond, Conneaut, O.
Swiss Colony Engineering Div., Monroe, Wis.
Trane Co., The, LaCrosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Vapor Heating Corp., Chicago, Ill.
Velan Valve Corp., Plattsburgh, N. Y.
Webster & Co., Warren, Camden, N. J.
Wright-Austin Co., Detroit, Mich.

TRAPS, WATER, FOR OIL TANKS

Clark Mfg. Co., Cleveland, O.
Squires Co., C. E., The, Cleveland, O.

TREATMENT, CHEMICAL, TO REMOVE SCALE

Acme Chemical Co., Milwaukee, Wis.
Allen Co., Robert G., Mechanicsville, N. Y.
American Sand-Banum Co., Inc., Merrick, N.Y.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Berna Corp., Long Island City, N.Y.
Bird-Archer Co., Philadelphia, Pa.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Chemical Solvent Co., Birmingham, Ala.
Dearborn Chemical Co., Chicago, Ill.
Dowell Div. of The Dow Chemical Co., Tulsa, Okla.
Erlen Products Co., Burbank, Calif.
Gotham Refining Chemical Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hall Laboratories, Pittsburgh, Pa.
Heller Laboratories, Inc., Leonia, N.J.
Ionac Chemical Co., The, Div. of Pfaudler Permutit, Inc., Birmingham, N.J.
Jeffrey Mfg. Co., Columbus, O.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Lester Laboratories, Inc., Atlanta, Ga.
Nalco Chemical Co., Chicago, Ill.
Normal Chemical Co., St. Paul, Minn.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Perolin Co., Inc., The, New York, N. Y.
Process Solvent Co., Kansas City, Kans.
Radiator Specialty Co., Charlotte, N. C.
S.O.S. Products Co., Inc., Brooklyn, N.Y.
Salsbury Corp., Los Angeles, Calif.
Sci-eff-ec Labs., Chagrin Falls, O.
Smith Chemical Co., E. W., La Puente, Calif.
Sparkler-Filtrion Corp., North Chicago, Ill.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Stiles Karlsonite Corp., Waukegan, Ill.
Water Treatment Corp. of America, Pittsburg, Pa.
X Laboratories, Inc., New York, N. Y.

TREATMENT, FUEL OIL, TO PREVENT SLUDGE

Acme Chemical Co., Milwaukee, Wis.
Allen Co., Robert G., Mechanicsville, N. Y.
American Sand-Banum Co., Inc., Merrick, N. Y.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Armour Industrial Chemical Co., Div. of Armour & Co., Chicago, Ill.
B-I-F Industries, Proportioneers Div., Providence, R. I.
Bird-Archer Co., Philadelphia, Pa.
Black & White Chemical Co., New York, N. Y.
Dearborn Chemical Co., Chicago, Ill.
Drew & Co., Inc., E. F., New York, N. Y.
Eds-Wil Burner Corp., Chicago, Ill.
Empire Chemical Products Co., Newark, N.J.
Erlen Products Co., Burbank, Calif.
Evis Mfg. Co., Chicago, Ill.
Gotham Refining Chemical Co., New York, N. Y.
Heller Laboratories, Inc., Leonia, N.J.
Hercules Chemical Co., Inc., New York, N. Y.
Magnus Chemical Co., Garwood, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Monsanto Chemical Co., St. Louis, Mo.
Montgomery Chemical Co., Jenkintown, Pa.
Nalco Chemical Co., Chicago, Ill.
Norcross Co., Sterling E., Bloomfield, N.J.
Normal Chemical Co., St. Paul, Minn.
North American Mogul Products Co., The, Cleveland, O.
Nutmeg Chemical Co., New Haven, Conn.
Perolin Co., Inc., New York, N. Y.
Petroleum Solvents Corp., New York, N. Y.
Process Solvent Co., Kansas City, Kans.
Radiator Specialty Co., Charlotte, N. C.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Smith Chemical Co., E. W., La Puente, Calif.
Sparkler-Filtrion Corp., North Chicago, Ill.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Sudbury Laboratory, South Sudbury, Mass.
Warren Refining & Chemical Co., The, Cleveland, O.

TREATMENT, STEAM SYSTEM, TO INHIBIT CORROSION

Acme Chemical Co., Milwaukee, Wis.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American K. A. T. Corp., Subsidiary of Magnus Chemical Co., Inc., Garwood, N. J.
American Water Softener Co., Philadelphia, Pa.
American Well Wks., Aurora, Ill.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Berna Corp., Long Island City, N.Y.
B-I-F Industries, Proportioneers Div., Providence, R. I.
Bird-Archer Co., Philadelphia, Pa.
Bruner Corp., Milwaukee, Wis.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Cannon Chemical Co., Inc., Cambridge, Mass.
Chemical Solvent Co., Birmingham, Ala.
Cochrane Corp., Philadelphia, Pa.
Continental Products Co., Euclid, O.
Dearborn Chemical Co., Chicago, Ill.
Drew & Co., Inc., E. F., New York, N. Y.
Easton R. S. Corp., Brooklyn, N. Y.
Elgin Softener Corp., Elgin, Ill.
Empire Chemical Products Co., Newark, N.J.
Erlen Products Co., Burbank, Calif.
Gotham Refining Chemical Co., New York, N. Y.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hall Laboratories, Pittsburgh, Pa.
Heller Laboratories, Inc., Leonia, N. J.
Hercules Chemical Co., Inc., New York, N. Y.
Kenite Laboratory, Madison, N. J.
Magnus Chemical Co., Garwood, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
Nalco Chemical Co., Chicago, Ill.
North American Mogul Products Co., The, Cleveland, O.
Packard Mfg. Co., Jacksonville, Fla.
Perolin Co., Inc., New York, N. Y.
Process Solvent Co., Kansas City, Kans.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Saverite Engineering Co., Hoboken, N. J.
Sci-eff-ec Labs., Chagrin Falls, O.
Smith Chemical Co., E. W., La Puente, Calif.
Sparkler-Filtrion Corp., North Chicago, Ill.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Conneaut, O.
Sulfio, Inc., Elizabeth, N. J.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Warren Refining & Chemical Co., Cleveland, O.
Water Treatment Corp. of America, Pittsburgh, Pa.
X Laboratories, Inc., New York, N. Y.

TREATMENT, WATER, TO INHIBIT CORROSION

Acme Chemical Co., Milwaukee, Wis.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Sand-Banum Co., Inc., Merrick, N. Y.
American Water Softener Co., Philadelphia, Pa.
American Well Works, Aurora, Ill.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Armour Industrial Chemical Co., Div. of Armour & Co., Chicago, Ill.
Barnstead Still & Sterilizer Co., Boston, Mass.

Berna Corp., Long Island City, N.Y.
B-I-F Industries, Proportioneers Div., Providence, R. I.
Bird-Archer Co., Philadelphia, Pa.
Black & White Chemical Co., New York, N.Y.
Bruner Corp., Milwaukee, Wis.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Cannon Chemical Co., Inc., Cambridge, Mass.
Cepi-American, Inc., Hillside, Ill.
Chemical Solvent Co., Birmingham, Ala.
Clayton Mfg. Co., El Monte, Calif.
Cochrane Corp., Philadelphia, Pa.
Culligan, Inc., Northbrook, Ill.
Dearborn Chemical Co., Chicago, Ill.
Drew & Co., Inc., E. F., New York, N. Y.
Easton R.S. Corp., Brooklyn, N. Y.
Electro Rust-Proofing Corp., Belleville, N. J.
Elgin Softener Corp., Elgin, Ill.
Empire Chemical Products Co., Newark, N.J.
Erlen Products Co., Burbank, Calif.
Filtrine Mfg. Co., Inc., Waldwick, N.J.
Fischer & Porter Co., Warminster, Pa.
Garman Co., Inc., The, St. Louis, Mo.
Gotham Refining Chemical Co., New York, N. Y.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hall Laboratories, Pittsburgh, Pa.
Heller Laboratories, Inc., Leonia, N. J.
Hungerford & Terry, Inc., Clayton, N. J.
Illinois Water Treatment Co., Rockford, Ill.
Industrial Filter & Pump Co., Cicero, Ill.
Infilco, Inc., Tucson, Ariz.
Ionac Chemical Co., The, Div. of Pfaudler Permutit, Inc., Birmingham, N.J.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Layne & Bowler, Inc., Memphis, Tenn.
Lester Laboratories, Inc., Atlanta, Ga.
Magnus Chemical Co., Garwood, N. J.
McMillan Industrial Supplies, C. C., Portland, Ore.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
Monsanto Chemical Co., St. Louis, Mo.
Morheat Corp., Cincinnati, O.
Myers & Bro. Co., The F. E., Ashland, O.
Narda Ultrasonics Corp., Westbury, Long Island, N. Y.
Nalco Chemical Co., Chicago, Ill.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Pacific Lumber Co., The, San Francisco, Calif.
Perolin Co., Inc., New York, N. Y.
Process Solvent Co., Kansas City, Kans.
Reynolds Water Conditioning Co., Detroit, Mich.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Salsbury Corp., Los Angeles, Calif.
Saverite Engineering Co., Hoboken, N. J.
Sci-eff-ec Labs., Chagrin Falls, O.
Smith Chemical Co., E. W., La Puente, Calif.
Sparkler-Filtrion Corp., North Chicago, Ill.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Conneaut, O.
Sudbury Laboratory, South Sudbury, Mass.
Sulflo, Inc., Elizabeth, N. J.
Uniflow Mfg. Co., Erie, Pa.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Virginia Smelting Co., West Norfolk, Va.
Water Service Laboratories, Inc., New York, N. Y.
Water Treatment Corp. of America, Pittsburgh, Pa.
Wyandotte Chemicals Corp., Wyandotte, Mich.
X Laboratories, Inc., New York, N. Y.

TREATMENT, WATER, TO PREVENT SCALE FORMATION

Acme Chemical Co., Milwaukee, Wis.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Sand-Banum Co., Inc., Merrick, N. Y.
American Water Softener Co., Philadelphia.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aqua Electric Scale Control, Inc., Cleveland, O.
Aquatrol Ferr-X Corp., Clifton, N. J.
Barnstead Still & Sterilizer Co., Boston, Mass.
Berna Corp., Long Island City, N.Y.
B-I-F Industries, Proportioneers Div., Providence, R.I.
Bird-Archer Co., Philadelphia, Pa.
Black & White Chemical Co., New York, N.Y.
Bruner Corp., Milwaukee, Wis.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Cepi-American, Inc., Hillside, Ill.
Chemical Solvent Co., Birmingham, Ala.
Clayton Mfg. Co., El Monte, Calif.
Cochrane Corp., Philadelphia, Pa.
Culligan, Inc., Northbrook, Ill.
Dearborn Chemical Co., Chicago, Ill.
Dehydrosal Systems, Inc., New York, N.Y.
Drew & Co., Inc., E. F., New York, N. Y.
Easton R. S. Corp., Brooklyn, N. Y.
Elgin Softener Corp., Elgin, Ill.
Empire Chemical Products Co., Newark, N.J.
Erlen Products Co., Burbank, Calif.
Evis Mfg. Co., Chicago, Ill.
Filtrine Mfg. Co., Inc., Waldwick, N.J.
Garman Co., Inc., The, St. Louis, Mo.
Gotham Refining Chemical Co., New York, N. Y.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hall Laboratories, Pittsburgh, Pa.
Heller Laboratories, Inc., Leonia, N. J.
Hungerford & Terry, Inc., Clayton, N. J.
Illinois Water Treatment Co., Rockford, Ill.
Imperial Chemicals Corp., Los Angeles, Calif.
Infilco, Inc., Tucson, Ariz.
Ionac Chemical Co., The, Div. of Pfaudler Permutit, Inc., Birmingham, N.J.
Kisco Boiler & Engineering Co., St. Louis, Mo.
Lester Laboratories, Inc., Atlanta, Ga.
Magnus Chemical Co., Garwood, N. J.
McMillan Industrial Supplies, C. C., Portland, Ore.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
Myers & Bro. Co., The F. E., Ashland, O.
Narda Ultrasonics Corp., Westbury, Long Island, N. Y.
Nalco Chemical Co., Chicago, Ill.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Pacific Lumber Co., The, San Francisco, Calif.
Packard Water Conditioners, Inc., Jacksonville, Fla.
Perolin Co., Inc., The, New York, N. Y.
Process Solvent Co., Kansas City, Kans.
Reynolds Water Conditioning Co., Detroit, Mich.
S. O. S. Products Co., Inc., Brooklyn, N. Y.
Sci-eff-ec Labs., Chagrin Falls, O.
Smith Chemical Co., E. W., La Puente, Calif.
Sparkler-Filtrion Corp., North Chicago, Ill.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Conneaut, O.
Uniflow Mfg. Co., Erie, Pa.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Universal Water Softener Co., Geneva, Ill.
Virginia Smelting Co., West Norfolk, Va.
Water Service Laboratories, Inc., New York, N. Y.
Water Treatment Corp. of America, Pittsburgh, Pa.
Wyandotte Chemicals Corp., Wyandotte, Mich.
X Laboratories, Inc., New York, N. Y.

TREATMENT, WATER, FOR SLIME AND ALGAE CONTROL

Acme Chemical Co., Milwaukee, Wis.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Water Softener Co., Philadelphia, Pa.
American Well Works, Aurora, Ill.
Ampion Corp., Long Island City, N. Y.
Anderson Chemical Co., Inc., Macon, Ga.
Anderson-Stolz Corp., Kansas City, Mo.
Aquatrol Ferr-X Corp., Clifton, N. J.
Armour Industrial Chemical Co., Div. of Armour & Co., Chicago, Ill.
Associated Laboratories, Inc., Lathrup Village, Mich.
Barnstead Still & Sterilizer Co., Boston, Mass.
Berna Corp., Long Island City, N.Y.
B-I-F Industries, Builders-Providence Div., Providence, R.I.
B-I-F Industries, Proportioneers Div., Providence, R. I.
Bird-Archer Co., Philadelphia, Pa.
Black & White Chemical Co., New York, N.Y.
Bruner Corp., Milwaukee, Wis.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Carolina Aniline & Extract Co., Charlotte, N. C.
Chemical Solvent Co., Birmingham, Ala.
Dearborn Chemical Co., Chicago, Ill.
Dow Chemical Co., The, Midland, Mich.
Drew & Co., Inc., E. F., New York, N. Y.
Easton R. S. Corp., Brooklyn, N. Y.
Erlen Products Co., Burbank, Calif.
Filtrine Mfg. Co., Inc., Waldwick, N. J.
Fischer & Porter Co., Warminster, Pa.
Garman Co., Inc., The, St. Louis, Mo.
Gotham Refining Chemical Co., New York, N. Y.
Graver Water Conditioning Co., New York, N. Y.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hall Laboratories, Pittsburgh, Pa.
Hanovia Lamp Div., Engelhard Hanovia, Inc., Newark, N. J. (ultraviolet)
Heller Laboratories, Inc., Leonia, N. J.
Hungerford & Terry, Inc., Clayton, N. J.
Imperial Chemicals Corp., Los Angeles, Calif.
Infilco, Inc., Tucson, Ariz.
Ionac Chemical Co., The, Div. of Pfaudler Permutit, Inc., Birmingham, N. J.
Jeffrey Mfg. Co., Columbus, O
Layne & Bowler, Inc., Memphis, Tenn.
Lester Laboratories, Inc., Atlanta, Ga.
Magnus Chemical Co., Garwood, N. J.
Metal & Thermit Corp., Rahway, N. J.
Metropolitan Refining Co., Inc., Long Island City, N. Y.
Milton Roy Co., Philadelphia, Pa.
Monsanto Chemical Co., St. Louis, Mo.
Myers & Bro. Co., The F. E., Ashland, O.
Nalco Chemical Co., Chicago, Ill.
Norcross Co., Sterling E., Bloomfield, N.J.
North American Mogul Products Co., The, Cleveland, O.
Oakite Products, Inc., New York, N. Y.
Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.
Oshkosh Filter & Softener Co., Oshkosh, Wis.
Pacific Lumber Co., The, San Francisco, Calif.
Pennsalt Chemicals Corp., Philadelphia, Pa.
Perolin Co., Inc., New York, N. Y.
Process Solvent Co., Kansas City, Kans.
S.O.S. Products Co., Inc., Brooklyn, N.Y.
Sci-eff-ec Labs., Chagrin Falls, O.
Smith Chemical Co., E. W., La Puente, Calif.
Solvay Process Div., Allied Chemical Corp., New York, N. Y.
Sparkler-Filtrion Corp., North Chicago, Ill.
Steelcote Mfg. Co., St. Louis, Mo.
Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Stiles Karlsonite Corp., Waukegan, Ill.
Strong, Carlisle & Hammond, Conneaut, O.
Uniflow Mfg. Co., Erie, Pa.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Virginia Smelting Co., West Norfolk, Va.
Wallace & Tiernan, Inc., Belleville, N. J.
Water Refining Co., Middletown, O.
Water Service Laboratories, Inc., New York, N. Y.
Water Treatment Corp. of America, Pittsburgh, Pa.

TRENCHING MACHINES FOR PIPE LINES

See Machines, Trenching for Pipe Lines

TRUCKS, LIFT

American Pulley Co., The, Div. Van Norman Industries, Inc., Philadelphia, Pa.
Engine & Material Handling Div., Allis-Chalmers Mfg. Co., Harvey, Ill.

Thern Machine Co., Winona, Minn.

TRY-COCKS, BOILER

Crane Co., Chicago, Ill.
Diamond Power Specialty Corp., Lancaster, O.
Ernst Water Column & Gauge Co., Livingston, N. J.
Huyette Co., Inc., Paul B., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
New York Air Valve Corp., Brooklyn, N. Y.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Reliance Gauge Column Co., Cleveland, O.
Swift Lubricator Co., Inc., Elmira, N. Y.

TUBE CLEANERS

See Cleaners, Tube

TUBE FINNING MACHINES

See Machines, Tube Finning

TUBES, BOILER

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Bros Inc., Minneapolis, Minn.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Crucible Steel Co. of America, Pittsburgh, Pa.
H & H Tube & Mfg. Co., Detroit, Mich.
Jones & Laughlin Steel Corp., Pittsburgh, Pa. (welded)
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Sawhill Tubular Products, Inc., Sharon, Pa.
Standard Tube Co., Detroit, Mich.
Trent Tube Co., East Troy, Wis. (stainless)

TUBES, CONDENSER

Ampco Metal, Inc., Milwaukee, Wis.
Anaconda American Brass Co., Waterbury, Conn.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Bundy Tubing Co., Detroit, Mich.
Byers Co., A. M., Pittsburgh, Pa. (cold drawn wrought iron)
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Chase Brass & Copper Co., Waterbury, Conn.
Clayton Mark & Co., Evanston, Ill.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
Edwards Engineering Corp., Pompton Plains, N. J.
Jones & Laughlin Steel Corp., Pittsburgh, Pa. (welded)
Lewin-Mathes Co., Div. of Cerro de Pasco Corp., St. Louis, Mo.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Nikoh Tube Co., Chicago, Ill.
Pacific Tube Co., Los Angeles, Calif.
Penn Brass & Copper Co., Erie, Pa.
Phelps Dodge Copper Products Corp., New York, N. Y.
Pittsburgh Steel Co., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Revere Copper and Brass Inc., New York, N. Y.
Reynolds Metals Co., Richmond, Va.
Roberts Co., C. A., Franklin Park, Ill.
Roberts Tube Div., Prestyle Mfg. Co., Detroit, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.
Scovill Mfg Co., Waterbury, Conn. (copper base)
Standard Tube Co., Detroit, Mich.
Trent Tube Co., East Troy, Wis. (stainless)
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.

TUBES, PITOT

Defender Instrument and Regulator Co., Boody, Ill.
Dwyer Mfg. Co., F. W., Michigan City, Ind.
Ellison Draft Gage Co., Chicago, Ill.
Foxboro Co., Foxboro, Mass.
Giannini & Co., Inc., G. M., Pasadena, Calif.
Hill & Co., E. Vernon, Lake Geneva, Wis.
Meriam Instrument Co., The, Cleveland, O.
Simplex Valve & Meter Co., Lancaster, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Trimount Instrument Div., General Controls Co., Skokie, Ill.
United Sensor & Control Corp., Glastonbury, Conn.

TUBING, ALUMINUM

Aluminum Co. of America, Pittsburgh, Pa.
Anaconda Aluminum Co., Louisville, Ky.
Anaconda American Brass Co., Waterbury, Conn.
Bohn Aluminum & Brass Corp., Detroit, Mich.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Central Steel & Wire Co., Chicago, Ill.
Channel Master Corp., Ellenville, N. Y.
Harvey Aluminum, Torrance, Calif.
Kaiser Aluminum & Chemical Sales, Inc., Oakland, Calif.
Moore & Co., Samuel, Mantua, O. (plastic coated bundles)
Olin Mathieson Chemical Corp., Metals Div., New York, N. Y.
Penn Brass & Copper Co., Erie, Pa.
Revere Copper and Brass Inc., New York, N. Y.
Reynolds Metals Co., Richmond, Va.
Roberts Co., C. A., Franklin Park, Ill.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Swepco Tube Corp., Clifton, N. J.
United Wire & Supply Corp., Cranston, R. I.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.
Youngstown Welding & Engineering Co., Youngstown, O.

TUBING BENDERS

See Benders, Tubing

TUBING, BRASS AND COPPER

Anaconda American Brass Co., Waterbury, conn.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Columbia Technical Corp., Woodside, N. Y. (with insulation on tubing)
Gardiner Metal Co., Chicago, Ill.
H & H Tube & Mfg. Co., Detroit, Mich.
Hussey & Co., C. G., Div. of Copper Range Co., Pittsburgh, Pa.
Keeney Mfg. Co., Newington, Conn. (Chrome plated)
Kensico Tube Co., Div. Robinson Technical Products, Inc., Mt. Kisco, N. Y.
Lead Lined Iron Pipe Co., Wakefield, Mass. (lead covered)
Lewin-Mathes Co., Div. of Cerro de Pasco Corp., St. Louis, Mo.
Moore & Co., Samuel, Mantua, O. (plastic coated bundles)
Mueller Co., Decatur, Ill.
Mueller Brass Co., Port Huron, Mich.
National Copper & Smelting Co., Cleveland, O.
Penn Brass & Copper Co., Erie, Pa.
Phelps Dodge Copper Products Corp., New York, N. Y.
Reading Tube Corp., New York, N. Y.
Revere Copper and Brass Inc., New York, N. Y.
Roberts Tube Div., Prestyle Mfg. Co., Detroit, Mich.
Scovill Mfg. Co., Waterbury Conn.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J. (K-L-M and DWV)
United Wire & Supply Corp., Cranston, R. I.
Viking Copper Tube Co., Cleveland, O.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.
Young Regulator Co., Cleveland, O.

TUBING, BRONZE

Ampco Metal, Inc., Milwaukee, Wis.
Anaconda American Brass Co., Waterbury, Conn.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Bridgeport Brass Co., Bridgeport, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
International Metal Hose Co., Bellevue, O.
Revere Copper and Brass Inc., New York, N. Y.

TUBING, CAPILLARY, FOR REFRIGERANTS

Allin Mfg. Co., Chicago, Ill.
Anaconda American Brass Co., Waterbury, Conn.
Anaconda Metal Hose Div., Anaconda American Brass Co., The, Waterbury, Conn.
Brass & Copper Imports, Inc., Minneapolis, Minn.
Kenisco Tube Co., Div. Robinson Technical Products, Inc., Mt. Kisco, N. Y.
Madden Brass Products Co., Aurora, Ill.
Penn Brass & Copper Co., Erie, Pa.
Reading Tube Corp., New York, N. Y.
Refrigeration Research, Inc., Brighton, Mich.
Revere Copper and Brass Inc., New York, N. Y.
Sawhill Tubular Products, Inc., Sharon, Pa.
United Wire & Supply Corp., Cranston, R. I.
Wabash Corp., Chicago, Ill.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.

TUBING, CONTROL, FOR INSTRUMENTATION

Anaconda Metal Hose Div., Anaconda American Brass Co., The, Waterbury, Conn.
Crescent Insulated Wire & Cable Co., Trenton, N. J.
Kenisco Tube Co., Div. Robinson Technical Products, Inc., Mt. Kisco, N. Y.
Moore & Co., Samuel, Mantua, O.
Nylon Molding Corp., Garwood, N. J.
Okonite Co., The, Passaic, N. J.

TUBING CUTTERS

See Cutters, Tubing

TUBING, DUPLEX

Anaconda American Brass Co., Waterbury, Conn. (copper/steel admiralty/steel)
Anaconda Metal Hose Div., Anaconda American Brass Co., The, Waterbury, Conn. (metal)
Bridgeport Brass Co., Bridgeport, Conn. (combinations of Admiralty aluminum brass, copper, capro nickel, brass, aluminum, nickel, steel, stainless steel, alloy steel, tin)
Phelps Dodge Copper Products Corp., New York, N. Y. (copper alloy)
Polymer Corp., The, Reading, Pa. (nylon)
Republic Steel Corp., Cleveland, O. (Steel)
Uehling Instrument Co., Paterson, N. J.
Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich.

TUBING, FABRIC, FLEXIBLE

Arrowhead Products, Div. of Federal Mogul-Bower-Bearings, Inc., Long Beach, Calif.
Bemis Bro. Bag Co., St. Louis, Mo.
Flexible Tubing Corp., Guilford, Conn.
Johns-Manville Corp., New York, N. Y.
Zippertubing Co., The, Los Angeles, Calif.

TUBING, FINNED

Also See Surface, Finned, Heating; and Surface, Finned, Cooling

TUBING, FINNED

Aimco Products Corp., Subsid. of Yuba Consolidated Industries, Inc., Tulsa, Okla.
Alco Products, Inc., Schenectady, N. Y.
Bridgeport Brass Co., Bridgeport, Conn.
Brown Fintube Co., Elyria, O.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Chase Brass & Coper Co., Waterbury, Conn. (spiral wound, copper)
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Edwards Engineering Corp., Pompton Plains, N. J.

G. & O. Mfg. Co., New Haven, Conn.
Griscom-Russell Co., The, Massillon, O.
Heat Transfer Products, Inc., Perkasie, Pa.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y. (internal fins)
Heatron, Inc., York, Pa.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Lewis & Saunders, Inc., Lakeport, N. H.
McCord Corp., Detroit, Mich.
Merchant & Evans Co., Philadelphia, Pa.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Peerless of America, Inc., Chicago, Ill.
Reading Tube Corp., New York, N. Y.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Rempe Co., Chicago, Ill.
Revere Copper & Brass, Inc., New York.
Rittling Corp., The, Buffalo, N. Y.
Rome-Turney Radiator Co., Rome, N. Y.
Sawhill Tubular Products, Inc., Sharon, Pa.
Schemenauer Mfg. Corp., Holland, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Sterling Radiator Co., Inc., Westfield, Mass.
Tenney Engineering, Inc., Union, N. J.
Trane Co., The, La Crosse, Wis.
United Machinery Sales Co., Chicago, Ill.
United Wire & Supply Corp., Cranston, R. I.
Vapor Heating Corp., Chicago, Ill.
Vulcan Radiator Co., Hartford, Conn.
Wall Tube & Metal Products Co., Newport, Tenn.
Wolverine Tube. Div. of Calumet and Hecla, Inc., Allen Park, Mich (Aluminum, copper alloy)

TUBING, MAGNESIUM

Bridgeport Brass Co., Bridgeport, Conn.
Dow Chemical Co., The, Midland, Mich.

TUBING, METAL, FLEXIBLE

Allied Metal Hose Co., Long Island City, N. Y.
Anaconda American Brass Co., Waterbury, Calif.
Anaconda Metal Hose Div., Anaconda American Brass Co., The, Waterbury, Conn.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Atlantic Metal Hose Co., Inc., New York.
Bridgeport Brass Co., Bridgeport, Conn.
Cobra Metal Hose Div., D-K Mfg. Co., Chicago, Ill.
Crescent Insulated Wire & Cable Co., Trenton, N. J. (cabled)
Flexaust Co., New York, N. Y
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
International Metal Hose Co., Bellevue, O.
Keflex Mfg. Div. of U. S. Flexible Metallic Tubing Co., San Francisco, Calif.
Johnson Metal Hose, Inc., Waterbury, Conn.
Marquette Coppersmithing Co., Philadelphia.
National Lead Co., New York, N. Y.
Packless Metal Hose, Inc., Mt. Vernon, N. Y.
Pennsylvania Flexible Metallic Tubing Co., Paoli, Pa.
Titeflex, Inc., Springfield, Mass.
United Metal Hose Co., Inc., Long Island City, N. Y.
Universal Metal Hose Co., Chicago, Ill.

TUBING, NICKEL AND NICKEL ALLOY

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bart Mfg. Corp., Belleville, N. J.
Bridgeport Brass Co., Bridgeport, Conn.
Bundy Tubing Co., Detroit, Mich.
Chase Brass & Copper Co., Waterbury, Conn.
Damascus Tube Co., Greenville, Pa.
Esco Corp., Portland, Ore.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Greenville Tubes, Inc., Greenville, Pa.
Harrison Steel Corp., Brooklyn, N. Y.
Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
International Nickel Co., Inc., The, New York. N. Y.
Lewin-Mathes Co., Div. of Cerro de Pasco Corp., St. Louis, Mo.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Phoenix Steel Corp., Phoenix Steel Tube Div., Phoenixville, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Sawhill Tubular Products, Inc., Sharon, Pa.
Sheldon & Co., Inc., M.L., New York, N. Y.
Swepco Tube Corp., Clifton, N. J.
Titeflex, Inc., Springfield, Mass.
Trent Tube Co., East Troy, Wis.
United Wire & Supply Corp., Cranston, R. I.
Wolverine Tube Div. of Calumet and Hecla, Inc., Allen Park, Mich.
Youngstown Welding & Engineering Co., Youngstown, O.

TUBING, NICKEL PLATED

Bart Mfg. Corp., Belleville, N. J.
Nikoh Tube Co., Chicago, Ill.
Sheldon & Co., Inc., M.L., New York, N. Y.

TUBING, PLASTIC

Acme-Hamilton Mfg. Corp., Trenton, N. J.
Alpha Plastics, Inc., Livingston, N. J. (PVC)
Amercoat Corp., South Gate, California. (rigid epoxy, 550 psi, @ 130 F)
American Agile Corp., Bedford, O. (flexible)
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Anaconda Metal Hose Div., Anaconda American Brass Co., The, Waterbury, Conn. (teflon)
Anderson Metals Corp., Kansas City, Mo. (small sizes)
Anesite Co., Chicago, Ill. (polyethylene, butyrate, kralastic, cycolac)
Argo Plastic Products, Cleveland, O. (polyethylene, normal and linear, clear vinyl)
Carlon Products Corp., Aurora, O.
Chicago Gasket Co., Chicago, Ill.
Commercial Plastics Co., Chicago, Ill. (rigid and non-rigid)
Conley Plastic Corp., Ed, Tulsa, Okla.
Consolidated Pipe Co. of America, Akron, O. (polyethylene flexible)
Continental-Diamond Fibre Corp., Newark, Del.
Crane Associates, Robert S., Columbus, O. (flexible and rigid)
Crane Co., Chicago, Ill. (polyethylene)
Crescent Insulated Wire & Cable Co., Trenton, N. J. (polyethylene & nylon)
Crescent Plastics, Inc., Evansville, Ind. (flexible)
Danielson Mfg. Co., Danielson, Conn. (nylon)
Dayco Corp., Dayton, O.
Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y. (polyvinyl)
Dow Chemical Co., The, Midland, Mich. (saran)
Extruded Plastics, Inc., Norwalk, Conn.
Fibercast Co., Sand Spring, Okla.
Flexible Tubing Corp., Guilford, Conn.
Flexrock Co., Philadelphia, Pa. (teflon)
Foamade Industries, Oak Park, Mich. (polyethylene)
Franklin Plastics, Inc., Franklin, Pa. (polyethylene)
Garlock, Inc., Palmyra, N. Y. (teflon, nylon)
Gates Rubber Co., The, Denver, Colo.
General Electric Co., Laminated Products Dept., Coshocton, O. (laminated)
Goodrich Industrial Products Co., B. F., Akron, O. (flexible and rigid)
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O. (PVC; flexible)
Goodyear Tire & Rubber Co., Akron, O.
Haveg Industries, Inc., Wilmington, Del. (teflon)
Hudson Industries, Inc., Detroit, Mich.
Imperial-Eastman Corp., Chicago, Ill. (Polypropylene, polyethylene and nylon)
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Irvington Div., Minnesota Mining & Mfg. Co., Freehold, N. J. (vinyl, flexible)
Jaco Mfg. Co., Berea, O.
Jarrow Products, Inc., Chicago, Ili. (vinyl plastic)
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rigid, PVC)
Luzerne Rubber Co., Trenton, N. J. (rigid PVC)
Manufacturers Corp., Mansfield, O.
Moore & Co., Samuel, Mantua, O. (polyethylene and nylon)
Munray Products Div. of Fanner Mfg. Co., Cleveland, O. (polyethylene, vinyl)
National Tube Div., United States Steel Corp., Pittsburgh, Pa. (polyethylene flexible polyvinyl chloride rigid)
Nylon Molding Corp., Garwood, N. J. (nylon)
Pacific States Felt & Mfg. Co., Inc., San Francisco, Calif. (fibre and bakelite and sponge rubber)
Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O. (polyethylene and nylon)
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif. (butyrate; polyethylene; acrylic; PVC; rigid; flexible PVC; cycolac; kralastic; nylon; styrene)
Polygon Plastic Co., Walkerton, Ind. (reinforced fiberglass polyester; epoxy)
Polymer Corp., The, Reading, Pa. (Nylon)
Pyramid Plastics, Inc., Chicago, Ill. (saran, polyethylene, vinyl)
Quick Plastics, Jackson, Mich.
Reflin Co., San Diego, Calif. (rigid, reinforced with glass fibers)
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O. (Vinyl)
Resistoflex Corp., Roseland, N. J.
Ryerson & Son, Inc., Joseph T., Chicago, Ill. (PVC)
Sandee Mfg. Co. Chicago, Ill. (all thermoplastic)
Saran Lined Pipe Co., Ferndale, Mich. (saran)
Shurclose Seal Co., Detroit, Mich. (rigid and flexible)
Southern Plastics Co., Columbia, S. C. (rigid, non-rigid)
Southwestern Plastic Pipe Co., Mineral Wells, Tex. (polyethylene)
Titeflex, Inc., Springfield, Mass. (Teflon)
Trans-Plastics Corp., Inc., Cleveland, O. (PVC)
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J. (flexible polyethylene, semi-rigid, rigid high impact)
Uehling Instrument Co., Paterson, N. J.
United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J. (nylon, teflon)
United States Rubber Co., New York, N. Y. (extruded)
United States Stoneware Co., New York.
United States Stoneware Co., Plastics & Synthetics Div., Akron, O.
Vanton Pump & Equipment Corp., Hillside, N. J. (vinyl-Polethylene)
Western Plastics Corp., Tacoma, Wash. (polyethylene)
Yardley Plastics Co., Columbus, O. (polyethylene, black and natural)
Youngstown Sheet & Tube Co., Youngstown, O. (rigid)
Zippertubing Co., The, Los Angeles, Calif. (PVC)

TUBING, RUBBER

Acme-Hamilton Mfg. Corp., Trenton, N. J.
Continental Rubber Wks., Erie, Pa.
Garlock, Inc., Palmyra, N. Y.
Gates Rubber Co., The, Denver, Colo.
General Tire & Rubber Co., Industrial Products Div., Wabash, Ind.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Hewitt-Robins, Inc., Stamford, Conn.
Jarrow Products, Inc., Chicago, Ill. (sponge)
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Luzerne Rubber Co., Trenton, N. J. (hard rubber)
Mercer Rubber Co., Hamilton Sq., N. J.
Nazar Rubber Co., Toledo, O.
Raybestos-Manhattan, Inc., Passaic, N. J.
Rubatex Div., Great American Industries, Inc., Bedford, Va.
United States Rubber Co., New York, N. Y. (extruded)

TUBING, SILVER CLAD AND SILVER ALLOY

American Platinum & Silver Div., Engelhard Industries, Inc., Newark, N. J.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Handy & Harman, New York, N. Y.
Texas Instruments Inc., Metals & Controls Div., Attleboro, Mass.

TUBING, STEEL, ALLOY, SEAMLESS

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Esco Corp., Portland, Ore.

Greenville Tubes, Inc., Greenville, Pa.
Harrison Steel Corp., Brooklyn, N. Y.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Pacific Tube Co., Los Angeles, Calif.
Phoenix Steel Corp., Phoenix Steel Tube Div., Phoenixville, Pa.
Pittsburgh Steel Co., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Timken Roller Bearing Co., Canton, O.
Tubular Div., The National Supply Co., Pittsburgh, Pa.
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

TUBING, STEEL, ALLOY, WELDED

Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
Greenville Tubes, Inc., Greenville, Pa.
Harrison Steel Corp., Brooklyn, N. Y.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Revere Copper & Brass, Inc., New York, N. Y.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Swepco Tube Corp., Clifton, N. J.
Trent Tube Co., East Troy, Wis.
Youngstown Sheet & Tube Co., Youngstown, O.
Youngstown Welding & Engineering Co., Youngstown, O.

TUBING, STEEL, BRAZED

Avon Tube Div., Higbie Mfg. Co., Rochester, Mich.
Bundy Tubing Co., Detroit, Mich.
Sawhill Tubular Products, Inc., Sharon, Pa.

TUBING, STEEL, SEAMLESS

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel & Wire Co., Chicago, Ill.
Esco Corp., Portland, Ore.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Lenz Co., Dayton, O.
Michigan Seamless Tube Co., So. Lyon, Mich.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Pacific Tube Co., Los Angeles, Calif.
Phoenix Steel Corp., Phoenix Steel Tube Div., Phoenixville, Pa.
Pittsburgh Steel Co., Phoenix Steel Tube Div., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Roberts Co., C. A., Franklin Park, Ill.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Timken Roller Bearing Co., Canton, O.
Tubular Div., The National Supply Co., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

TUBING, STEEL, STAINLESS

Allegheny Ludlum Steel Corp., Pittsburgh, Pa.
American Cast Iron Pipe Co., Birmingham, Ala.
Autoclave Engineers Sales Corp., Erie, Pa.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Central Steel & Wire Co., Chicago, Ill.
Chase Brass & Copper Co., Waterbury, Conn.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
Esco Corp., Portland, Ore.
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
Greenville Tubes, Inc., Greenville, Pa.
Harrison Steel Corp., Brooklyn, N. Y.
International Metal Hose Co., Bellevue, O.
Ladish Co., Cudahy, Wis.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Pacific Tube Co., Los Angeles, Calif.
Posen & Kline Tube Co., Norristown, Pa.
Republic Steel Corp., Cleveland, O.
Roberts Co., C. A., Franklin Park, Ill.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
Standard Tube Co., Detroit, Mich.
Swepco Tube Corp., Clifton, N. J.
Timken Roller Bearing Co., Canton, O.
Trent Tube Co., East Troy, Wis.
Union Steel Corp., Union, N. J.
Wall Tube & Metal Products Co., Newport, Tenn.
Youngstown Welding & Engrg. Co., Youngstown, O.

TUBING, STEEL, WELDED

Armco Steel Corp., Middletown, O.
Avon Tube Div., Highbie Mfg. Co., Rochester, Mich.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bundy Tubing Co., Detroit, Mich. (solder coated)
Central Steel & Wire Co., Chicago, Ill.
Channel Master Corp., Ellenville, N. Y.
Chicago Metal Mfg. Co., Chicago, Ill.
Clayton Mark & Co., Evanston, Ill.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
H-P Products, Inc., Louisville, O.
Jones & Laughlin Steel Corp., Pittsburgh, Pa. (electric-weld)
Laclede Steel Co., St. Louis, Mo.
National Tube Div., United States Steel Corp., Pittsburgh, Pa.
Nikoh Tube Co., Chicago, Ill.
Pacific Tube Co., Los Angeles, Calif.
Pittsburgh Tube Co., Pittsburgh, Pa.
Radiant Heat and Cooling Co., Santa Clara, Calif.
Republic Steel Corp., Cleveland, O.
Revere Copper and Brass, Inc., New York, N. Y.
Roll-Weld Pipe & Tube, Inc., Jacksonville, Fla.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Sawhill Tubular Products, Inc., Sharon, Pa.
South Chester Tube Co., Philadelphia, Pa.
Standard Tube Co., Detroit, Mich.
Swepco Tube Corp., Clifton, N. J.
Trent Tube Co., East Troy, Wis.
Tubular Div., The National Supply Co., Pittsburgh, Pa.
Wall Tube & Metal Products Co., Newport, Tenn.
Wheatland Tube Co., Philadelphia, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.
Youngstown Welding & Engineering Co., Youngstown, O.

TUBING, TITANIUM

Bridgeport Brass Co., Bridgeport, Conn.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
Harrison Steel Corp., Brooklyn, N. Y.
Harvey Aluminum, Torrance, Calif.
Republic Steel Corp., Cleveland, O.
Sawhill Tubular Products, Inc., Sharon, Pa.
Swepco Tube Corp., Clifton, N. J.
Trent Tube Co., East Troy, Wis.
Wolverine Tube, Div. of Calumet and Hecla, Inc., Allen Park, Mich.
Youngstown Welding & Engineering Co., Youngstown, O.

TUBING, WROUGHT IRON

Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Byers Co., A. M., Pittsburgh, Pa. (cold drawn)

TUBING, ZIRCONIUM

Babcock & Wilcox Co., The, Tubular Products Div., Beaver Falls, Pa.
Bridgeport Brass Co., Bridgeport, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
Crucible Steel Co. of America, Pittsburgh, Pa.
Damascus Tube Co., Greenville, Pa.
General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Harvey Aluminum, Torrance, Calif.
Sawhill Tubular Products, Inc., Sharon, Pa.
Trent Tube Co., East Troy, Wis.
Wolverine Tube, Div. of Calumet and Hecla, Inc., Allen Park, Mich.
Youngstown Welding & Engineering Co., Youngstown, O.

TURBINES, MECHANICAL DRIVE

Carling Turbine Blower Co., Worcester, Mass.
Coppus Engineering Corp., Worcester, Mass.
Dean Hill Pump Co., Indianapolis, Ind.
Elliott Co., Jeannette, Pa.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
General Electric Co., Small Steam Turbine Dept., Fitchburg, Mass.
Murray Iron Wks. Co., Burlington, Ia.
Pyle-National Co., The, Chicago, Ill.
Solar Aircraft Co., San Diego, Calif.
Steam Turbine Div., Worthington Corp., Wellsville, N. J.
Terry Steam Turbine Co., Hartford, Conn.
Westinghouse Electric Corp., Pittsburgh, Pa.
Whiton Machine Co., New London, Conn.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Worthington Corp., Harrison, N. J.

2, 3 AND 4-WAY VALVES

See Valves, 2, 3 and 4-way

ULTRASONIC DUST AND FUME COLLECTION

See Collection, Dust and Fume, Ultrasonic

ULTRASONIC TESTING

See Equipment, Ultrasonic Testing

ULTRAVIOLET LAMPS

See Lamps, Sterilizing for Duct Installation; Units, Sterilizing, Air

UNDERGROUND PIPING

See Conduit, Underground Piping

UNDERWATER HEATERS

See Heaters, Steam Jet, for Liquids

UNIONS, BRASS

Acheson Mfg. Co., Rankin, Pa.
Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Airaterra (Roylyn Products), Glendale, Calif.
American Sanitary Mfg. Co., Abingdon, Ill.
Brabant Brass Mfg. Co., Detroit, Mich.
Chase Brass & Copper Co., Waterbury, Conn.
Commonwealth Brass Corp., Detroit, Mich.
Crane Co., Chicago, Ill.
Flagg & Co., Inc., Stanley G., Philadelphia.
Gilbert Brass Foundry Co., St. Louis, Mo.
Grabler Mfg. Co., Cleveland, O.
Imperial-Eastman Corp., Chicago, Ill.
Ken-Ray Brass Products, Inc., Vermont, Ill.
King Union Co., Inc., Hillsgrove, R. I.
Moran Flexible Joint Co., Div. of Railroad Products Co., Cincinnati, O.
Mueller Brass Co., Port Huron, Mich.
New York Brass Foundry, New York, N. Y.
Nibco, Inc., Elkhart, Ind.
Patrol Valve Co., The, Cleveland, O. (dielectric insulating)
Phoenix Brass Fittings Corp., Irvington, N. J.
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Rhode Island Fittings Co., Providence, R. I.
Spanco Brass Sales, Allegan, Mich.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Union Metal Works Co., Inc., Chelsea, Mass.
Walworth Co., New York, N. Y.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

UNIONS, INSULATING

See Joints, Pipe, Electrical Insulating

UNIONS, MALLEABLE, BRASS SEAT

Airaterra (Roylyn Products), Glendale, Calif.
Almar Hydraulic Valve Co., Cleveland, O.
Beaton & Corbin Mfg. Co., Southington, Conn.
Corley Co., Inc., The, Bounton, N. J.

Crane Co., Chicago, Ill.
Das Div. of The Zeller Corp., Defiance, O.
Fairbanks Co., The, New York, N. Y.
Flagg & Co., Inc., Stanley G., Philadelphia, Pa.
General Fittings Co., East Greenwich, R. I.
Grabler Mfg. Co., Cleveland, O.
Grinnell Co., Inc., Providence, R. I.
Illinois Malleable Iron Co., Chicago, Ill.
James Foundry Corp., Ft. Atkinson, Wis.
Jefferson Union Co., Lexington, Mass.
King Union Co., Inc., Hillsgrove, R. I.
Malleable Iron Fittings Co., Branford, Conn.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Rhode Island Fittings Co., Providence, R. I.
Rockwood Sprinkler Co., Worcester, Mass.
Stockham Valves & Fittings, Birmingham, Ala.
Union Malleable Mfg. Co., Ashland, O.
Walworth Co., New York, N. Y.
Ward Foundries, Inc., J. P., Blossburg, Pa.

UNIONS, ORIFICE

Catawissa Valve & Fittings Co., Catawissa, Pa.
Clayton Mark & Co., Evanston, Ill.
Conoflow Corp., Subsid. of Walworth Co., Philadelphia, Pa.
Dahl Co., Inc., G. W., Bristol, R. I.
Foxboro Co., Foxboro, Mass.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Ladish Co., Cudahy, Wis.
Midwest Piping Co., Inc., St. Louis, Mo.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J.
Taylor Forge & Pipe Wks., Chicago, Ill.
Tube Turns Div. of Chemtron Corp., Louisville, Ky.
Walworth Co., New York, N. Y.

UNIONS, PLASTIC

Argo Plastic Products, Cleveland, O.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (unplasticized PVC)
Dow Chemical Co., The, Midland, Mich. (saran-lined)
Epco Sales, Inc., Cleveland, O. (dielectric, electrical insulating)
Imperial-Eastman Corp., Chicago, Ill.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (PVC)
Luzerne Rubber Co., Trenton, N. J.
Plastiline, Inc.; Pompano Beach, Fla.
Sloane Mfg. Co., Sun Valley, Calif.
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.
Vanton Pump & Equipment Corp., Hillside, N. J.

UNIONS, STEEL

Afco Fitting Co., Div. of Curtis Mfg. Co., Cleveland, O.
Anchor Coupling Co. Inc., Libertyville, Ill.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Catawissa Valve & Fittings Co., Catawissa, Pa.
Chiksan Co., Brea, Calif.
Clayton Mark & Co., Evanston, Ill.
Crane Co., Chicago, Ill.
Das Div. of The Zeller Corp., Defiance, O.
Esco Corp., Portland, Ore.
Frick Co., Waynesboro, Pa.
Gilbert Brass Foundry Co., St. Louis, Mo.
Gray Tool Co., Houston, Tex.
Henry Valve Co., Melrose Park, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Ladish Co., Cudahy, Wis.
Patrol Valve Co., The, Cleveland, O. (dielectric insulating)
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Roselle, N. J. (forged carbon, stainless steels and forged aluminum)
Rockwood Sprinkler Co., Worcester, Mass.
Steel Improvement & Forge Co., The, Cleveland, O.
Tube Turns Div. of Chemetron Corp., Louisville, Ky.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

UNIT COOLERS

See Coolers, Unit

UNIT HEATERS

See Heaters, Unit

UNIT VENTILATORS

See Ventilators, Unit

UNITARY AIR CONDITIONERS, FOR AUTOMOBILES

A.R.A. Mfg. Co., Grand Prairie, Texas.
Chrysler Corp., Airtemp Div., Dayton, O.
Frigikar Corp., Dallas, Tex.
Great Northern Mfg. Corp., Chicago, Ill.
Harrison Radiator Div., General Motors, Lockport, N. Y.
Keco Industries, Inc., Cincinnati, O.
Kool Engineering Corp., Chicago, Ill.
Mitchell Co., John E., Dallas, Tex.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles, Calif.

UNITARY AIR CONDITIONERS, BUS, TRUCK AND TRAILER

A.R.A. Mfg. Co., Grand Prairie, Texas.
Airflow Co., Rockville, Md.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O.
Consumer Products, Motor Wheel Corp., Lansing, Mich.
Ellis & Watts Products Inc., Cincinnati, O.
Frigikar Corp., Dallas, Tex.
Keco Industries, Inc., Cincinnati, O.
McGraw-Edison Co., Transportation Cooling Div., Chicago, Ill.
Metal Products Eng., Inc., Los Angeles, Calif. (Truck only)
Mitchell Co., John E., Dallas. Tex.
Onan & Sons Inc., D. W., Minneapolis.
Redmanson Corp., York, Pa.
Thermo King Corp., Minneapolis, Minn.
Trane Co., The, La Crosse, Wis.
Waukesha Motor Co., Waukesha, Wis.

UNITARY AIR CONDITIONERS, CENTRAL STATION TYPE

Self contained blower, heating and/or cooling coil, filter, humidifier unit for remote location and duct air distribution

Acme Industries, Inc., Jackson, Mich.
Air Conditioning, Inc., Ossining, N. Y. (5-30 tons)
Airfan Engineering Co., Los Angeles, Calif.
Airflow Co., Rockville, Md.
Air & Refrigeration Corp., New York, N. Y.
Alton Mfg. Co., Dallas, Tex.
American Cooling Tower Co., Kansas City, Mo.
American-Standard Industrial Div., Detroit, Mich.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Arkla Air Conditioning Corp., Little Rock, Ark. (absorption type)
Bahnson Co., Winston-Salem, N. C.
Bal-Air, Inc., Nashville, Tenn.
Blazer Corp., Passaic, N.J.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Bryant Mfg. Co., Indianapolis, Ind.
Buensod-Stacey Corp., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chicago Steel Furnace Co., Elk Grove, Ill.
Chrysler Corp., Airtemp Div., Dayton, O.
Clarage Fan Co., Kalamazoo, Mich.
Cool-Ette, Inc., Detroit, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Domestic Mfg. Corp., Houston, Tex.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Drying Systems Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Ellis & Watts Products, Inc., Cincinnati, O.
Fedders Corp., Buffalo, N. Y.
General Air Conditioning Corp., Los Angeles, Calif.
General Electric Co., Air Conditioning Dept., Tyler, Tex.
Gilbert & Barker Mfg. Co., West Spring, Mass.
Governair Corp., Oklahoma City, Okla.
Halstead & Mitchell, Pittsburgh, Pa.
Hastings Air Control, Inc., Omaha, Nebr.
HI-PRESS Air Conditioning of America, Inc., New York, N. Y.
Iron Fireman Mfg. Co., Cleveland, O.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Mammoth Industries, Inc., Minneapolis, Minn. (roof top package)
Marlo Coil Co., St. Louis, Mo.
Master Fan Corp., Los Angeles, Calif.
McQuay, Inc., Minneapolis, Minn.
Melchior, Armstrong, Dessau, Inc., Ridgefield, N. J.
Midwest Air Conditioning Co., Des Moines, Ia.
National-U. S. Radiator Div., Crane Co., Johnston, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Niagara Blower Co., New York, N. Y.
Parks-Cramer Co., Fitchburg, Mass.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Rigidbilt Inc., Franklin Park, Ill.
Rinehart Inc., Richmond, Ind.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Surface Combustion Corp., Toledo, O.
Temperature Control, Inc., Atlanta, Ga.
Temtrol, Inc., Okarche, Okla.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, LaCrosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
U. S. Air Conditioning Corp., Delaware, O. (10 to 60 tons)
Vilter Mfg. Co., Milwaukee, Wis.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Worthington Corp., Harrison, N. J.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITARY AIR CONDITIONERS, EXCLUSIVELY FOR HOSPITAL OPERATING ROOMS, WITH EXPLOSIONPROOF MOTOR

American-Standard Industrial Div., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Chicago Steel Furnace Co., Elk Grove, Ill.
Conditioned Air, Inc., Charleston, W. Va.
Marlo Coil Co., St. Louis, Mo.
Niagara Blower Co., New York, N. Y.
Trane Co., The, La Crosse, Wis.
Worthington Corp., Harrison, N. J.

UNITARY AIR CONDITIONERS, HORIZONTAL PACKAGE TYPE

Self contained blower, cooling and/or heating coil, filter, humidifier unit for ceiling or platform location in space conditioned, for connection to remote compressor or cold water supply, and steam or hot water

Acme Industries, Inc., Jackson, Mich.
Addison Products Co., Addison, Mich.
Air Conditioning, Inc., Ossining, N. Y.
Air Conditioning Engineering Co., Cambridge, Mass.
Airfan Engineering Co., Los Angeles, Calif.
Airflow Co., Rockville, Md.
Air & Refrigeration Corp., New York, N. Y.
Albion Div., McGraw-Edison Co., Albion, Mich.
American-Standard Industrial Div., Detroit, Mich.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Arkla Air Conditioning Corp., Little Rock, Ark.
Bal-Air Inc., Nashville, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Besser Furnace and Air Conditioning Corp., Charlotte, N. C.
Blazer Corp., Passaic, N. J.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Brown Products Corp., Union, N. J.
Bryant Mfg. Corp., Indianapolis, Ind.
Buensod-Stacey Corp., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Corp., Airtemp Div., Dayton, O.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.

Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Drying Systems Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders Corp., Buffalo, N. Y.
Friedrich Refrigerators, Inc., San Antonio, Tex.
General Electric Co., Air Conditioning Dept., Tyler, Tex. (ceiling mounted)
Governair Corp., Oklahoma City, Okla.
Hastings Air Control, Inc., Omaha, Nebr.
International Mfg. Co., Oklahoma City, Okla.
Iron Fireman Mfg. Co., Cleveland, O.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
King Co. of Owatonna, The, Owatonna, Minn.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Lennox Industries Inc., The, Marshalltown, Ia.
Marlo Coil Co., St. Louis, Mo.
Master Fan Corp., Los Angeles, Calif.
Mathes Co., The, Div. Glen Alden Corp., Marble Falls, Tex.
McQuay, Inc., Minneapolis, Minn.
Midwest Air Conditioning Co., Des Moines, Ia.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Div., Crane Co., Johnston, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Niagara Blower Co., New York, N. Y.
Parks-Cramer Co., Fitchburg, Mass.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Franklin Park, Ill.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Temtrol, Inc., Okarche, Okla.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, La Crosse, Wis.
Tuck-Aire Furnace Co., San Francisco, Calif.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United Electric Co., Wichita Falls, Tex.
U. S. Air Conditioning Corp., Delaware, O.
Vilter Mfg. Co., Milwaukee, Wis.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Williamson Co., Cincinnati, O.
Worthington Corp., Harrison, N. J.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITARY AIR CONDITIONERS, INDUSTRIAL TYPE

Acme Industries, Inc., Jackson, Mich.
Aimco Products Corp., Subsid. of Yuba Consolidated Industries, Inc., Tulsa, Okla.
Airflow Co., Rockville, Md.
Air & Refrigeration Corp., New York, N. Y.
American Cooling Tower Co., Kansas City, Mo.
American-Standard Industrial Div., Detroit, Mich.
Bahnson Co., Winston-Salem, N. C.
Bal-Air, Inc., Nashville, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O.
Clarage Fan Co., Kalamazoo, Mich.
Cobell Industries, Inc., Cleburne, Tex.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dialatemp, Inc., St. Louis, Mo.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Drying Systems Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Frick Co., Waynesboro, Pa.
General Electric Co., Air Conditioning Dept., Tyler, Tex.
Governair Corp., Oklahoma City, Okla.
Haertel Co., Walter, Minneapolis, Minn.
Hastings Air Control, Inc., Omaha, Neb.
Howe Ice Machine Co., Chicago, Ill.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky.
King Co. of Owatonna, The, Owatonna, Minn.
Kramer Trenton Co., Trenton, N. J.
Larkin Coils, Inc., Atlanta, Ga.
Lintern Corp., Painesville, O.
Mammoth Industries, Inc., Minneapolis, Minn. (roof top package)
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Midwest Air Conditioning Co., Des Moines.
National-U. S. Radiator Div., Crane Co., Johnston, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Niagara Blower Co., New York, N. Y.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Rempe Co., Chicago, Ill.
Rigidbilt Inc., Franklin Park, Ill.
Rinehart Inc., Richmond, Ind.
Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., St. Louis, Mo.
Simplaire, New York, N. Y.
Surface Combustion Corp., Toledo, O.
Temtrol, Inc., Okarche, Okla.
Thermal Engineering Corp., Houston, Tex.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
U. S. Air Conditioning Corp., Delaware, O.
Ventil-Aire Corp., Ridgewood, N. Y.
Vilter Mfg. Co., Milwaukee, Wis.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Worthington Corp., Harrison, N. J.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITARY AIR CONDITIONERS, MOBILE, MOUNTED ON TRUCK OR TRAILER

Airflow Co., Rockville, Md.
Chrysler Corp., Airtemp Div., Dayton, O. (3 to 36 tons)
Ellis & Watts Products, Inc., Cincinnati, O.
Keco Industries, Inc., Cincinnati, O.
Mitchell Co., John E., Dallas, Tex.
Redmanson Corp., York, Pa.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Thermo King Corp., Minneapolis, Minn.
York Div., Borg-Warner Corp., York, Pa.

UNITARY AIR CONDITIONERS SUMMER, EVAPORATIVE COOLING TYPE

For cooling by evaporation, no dehumidification

Air-Cooling Engineering Co., Evanston, Ill.
Airfan Engineering Co., Los Angeles, Calif.
Air & Refrigeration Corp., New York, N. Y.
Alton Mfg. Co., Dallas, Tex.
American Cooling Tower Co., Kansas City, Mo.
American Moistening Co., Cleveland, N. C.
American-Standard Industrial Div., Detroit, Mich.
Bahnson Co., Winston-Salem, N. C.
Barwick Mfg. Corp., Wichita, Kan.
Buensod-Stacey Corp., New York, N. Y.
Campbell Co., E. K., Kansas City, Mo.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Comfort Products Inc., Dallas, Tex.
Dearborn Stove Co., Dallas, Tex.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Essick Mfg. Co., Los Angeles, Calif.
Farr Co., Los Angeles, Calif.
Gaffers & Sattler, Los Angeles, Calif.
Hayes Furnace Mfg. & Supply Co., Torrance, Calif.
Heating Assurance, Inc., Spokane, Wash.
International Metal Products Co., Phoenix.
Kleer Kleen Mfg. Co., Hayward, Calif.
Lennox Industries, Inc., Marshalltown, Ia.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
Marlo Coil Co., St. Louis, Mo.
Martin Fan & Blower Co., Chicago, Ill.
Morey, Dan, Los Angeles, Calif. (as pen fiber replacement mats)
Mountain States Equipment Co., Denver.
National Gas Equipment Co., Inc., Denison, Tex.
Parks-Cramer Co., Fitchburg, Mass.
R. I. Humidifier & Ventilating Co., Inc., Cambridge, Mass.
Steam-O-Matic Corp., Sedalia, Mo.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles, Calif.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
United Electric Co., Wichita Falls, Tex.
Wright Mfg. Co., Phoenix, Ariz.

UNITARY AIR CONDITIONERS, SUMMER, ROOM TYPE, FLOOR CABINET, REMOTE COMPRESSOR OR COLD WATER, UNDER 36,000 BTU PER HR CAPACITY

Self contained blower, coil, filter unit for connection to remote compressor or cold water supply

Acme Industries, Inc., Jackson, Mich.
Air Conditioning Engineering Co., Cambridge, Mass.
American-Standard Plumbing & Heating Div., New York, N. Y.
Bal-Air, Inc., Nashville, Tenn.
Blazer Corp., Passaic, N. J.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Brown Products Corp., Union, N. J.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Corp., Airtemp Div., Dayton, O.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders Corp., Heating Div., Trenton, N. J.
Hastings Air Control, Inc., Omaha, Neb.
Hydrotherm, Inc., Northvale, N. J.
Ilg Electric Ventilating Co., Chicago, Ill.
International Mfg. Co., Oklahoma City, Okla.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Mitchell Mfg. Co., Chicago, Ill.
Modine Mfg. Co., Racine, Wis.
National-U. S. Radiator Div., Crane Co., Johnston, Pa.
Refrigeration Appliances, Inc., Chicago, Ill.
Rinehart Inc., Richmond, Ind.
Round Oak Div., Peerless Corp., Dowagiac, Mich.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Trane Co., The, La Crosse, Wis.
U. S. Air Conditioning Corp., Delaware, O.
Webster & Co., Warren, Camden, N. J.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whitehall Engineering Co., Inc., Chicago, Ill.
Williamson Co., Cincinnati, O.
Worthington Corp., Harrison, N. J.
Wright Mfg. Co., Phoenix, Ariz.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITARY AIR CONDITIONERS, SUMMER, ROOM TYPE, FLOOR CABINET, SELF CONTAINED COMPRESSOR, UNDER 36,000 BTU PER HR CAPACITY

Self contained blower, coil, compressor, filter units

Air Conditioning Engineering Co., Cambridge, Mass.
American Comfort Mfg. Co., Evanston, Ill.
American Furnace Co., St. Louis, Mo.
American-Standard Plumbing & Heating Div., New York, N. Y.
Bal-Air, Inc., Nashville, Tenn.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Corp., Airtemp Div., Dayton, O.

Cool-Ette, Inc., Detroit, Mich.
Emerson Electric Mfg. Co., The, St. Louis.
Emerson Radio & Phono Corp., Jersey City, N. J.
Fedders Corp., Buffalo, N. Y.
General Air Conditioning Corp., Los Angeles.
Great Northern Mfg. Corp., Chicago, Ill.
Hotpoint, Chicago, Ill.
Mathes Co., The, Div. Glen Alden Corp., Marble Falls, Tex.
Mitchell Mfg. Co., Chicago, Ill.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Philco Corp., Philadelphia, Pa.
Radio Corp. of America, RCA Victor Div., Camden, N. J.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Rinehart Inc., Richmond, Ind.
Round Oak Div., Peerless Corp., Dowagiac, Mich.
Surface Combustion Corp., Toledo, O.
Viking Mfg. Corp., Cleveland, O.
Webster & Co., Warren, Camden, N. J.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Wright Mfg. Co., Phoenix, Ariz.
York Div., Borg-Warner Corp., York, Pa.

UNITARY AIR CONDITIONERS, SUMMER, STORE TYPE, FLOOR CABINET, REMOTE COMPRESSOR OR CHILLED WATER, 36,000 BTU PER HR CAPACITY AND OVER

Self contained blower, coil, filter unit for connection to remote compressor or chilled water supply

Chrysler Corp., Airtemp Div., Dayton, O.
Coleman Co., Inc., The, Wichita, Kans.
International Heater Co., Utica, N. Y.
International Mfg. Co., Oklahoma City, Okla.
Lennox Industries, Inc., Marshalltown, Ia.
Magic Aire Div., United Electric Co., Wichita Falls, Tex.
Marlo Coil Co., St. Louis, Mo.
Weather King of Florida, Inc., Orlando, Fla.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
Worthington Corp., Harrison, N. J.
York Div., Borg-Warner Corp., York, Pa.

UNITARY AIR CONDITIONERS SUMMER, STORE TYPE, FLOOR CABINET, SELF CONTAINED COMPRESSOR, 36,000 BTU PER HR CAPACITY AND OVER

Self contained blower, coil, compressor, filter unit with air discharge approximately 6 ft above floor

Acme Industries, Inc., Jackson, Mich.
Alton Mfg. Co., Dallas, Tex.
American Furnace Co., St. Louis, Mo.
American-Standard, Air Conditioning Div., New York, N. Y.
American-Standard Industrial Div., Detroit, Mich.
Anchor Div., Stratton & Terstegge Co., Inc., New Albany, Ind.
Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, O.
Bal-Air, Inc., Nashville, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Corp., Airtemp Div., Dayton, O.
Conditioned Air, Inc., Charleston, W. Va.
Cool-Ette, Inc., Detroit, Mich.
Crane Co., Chicago, Ill.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dialatemp, Inc., St. Louis, Mo.
Dunham-Bush, Inc., West Hartford, Conn.
Embassy Steel Products, Inc., Brooklyn, N. Y.
Emerson Radio & Phono Corp., Jersey City, N. J.
Frick Co., Waynesboro, Pa.
Friedrich Refrigerators, Inc., San Antonio, Tex.
General Automatic Products Corp., Baltimore, Md.
General Electric Co., Air Conditioning Dept., Tyler, Tex.
Great Northern Mfg. Corp., Chicago, Ill.
Hastings Air Control, Inc., Omaha, Nebr.
Lennox Industries Inc., The, Marshalltown, Ia.
Mathes Co., The, Div. Glen Alden Corp., Marble Falls, Tex.
Melchior, Armstrong, Dessau Inc., Ridgefield, N. J.
Midwest Air Conditioning Co., Des Moines, Ia.
Mitchell Mfg. Co., Chicago, Ill.
Muncie Gear Wks., Inc., Muncie, Ind.
National-U. S. Radiator Div., Crane Co., Johnston, Pa.
Round Oak Div., Peerless Corp., Dowagiac, Mich.
Surface Combustion Corp., Toledo, O.
Therm-Air Mfg. Co., Peekskill, N. Y.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
U. S. Air Conditioning Corp., Delaware, O.
Viking Mfg. Corp., Cleveland, O.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Whitehall Engineering Co., Inc., Chicago, Ill.
Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.
Worthington Corp., Harrison, N. J.
Wright Mfg. Co., Phoenix, Ariz.
York Div., Borg-Warner Corp., York, Pa.

UNITARY AIR CONDITIONERS, WALL TYPE, SELF-CONTAINED, FOR MOUNTING THROUGH WALL ONLY

Addison Products Co., Addison, Mich.
Admiral Corp., Chicago, Ill.
American-Standard Air Conditioning Div., New York, N. Y.
American-Standard Plumbing & Heating Div., New York, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Corp., Airtemp Div., Dayton, O.
Coleman Co., Inc., The, Wichita, Kans.
Emerson Radio & Phono Corp., Jersey City, N. J.
Fedders Corp., Buffalo, N. Y.
Frigidaire Div., General Motors Corp., Dayton, O.
General Electric Co., Room Air Conditioner Dept., Major Appliance Div., Louisville, Ky
Gibson Refrigerator Co., Greenville, Mich.
I. W. Air Conditioning Corp., New York, N. Y.
Kelvinator Div., American Motors Corp., Detroit, Mich.
King Refrigerator Co., Glendale, N. Y.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Perfection Div., Hupp Corp., Cleveland, O.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
Vornado, Inc., Garfield, N. J.
Webster & Co., Warren, Camden, N. J.
Worthington Corp., Harrison, N. J.
York Div., Borg-Warner Corp., York, Pa.

UNITARY AIR CONDITIONERS, WINDOW, FOR CASEMENT WINDOWS

Amana Refrigeration, Inc., Amana, Ia.
Chrysler Corp., Airtemp Div., Dayton, O.
Emerson Radio & Phono Corp., Jersey City, N. J.
Fedders Corp., Buffalo, N. Y.
Frigidaire Div., General Motors Corp., Dayton, O.
Gibson Refrigerator Co., Greenville, Mich.
I. W. Air Conditioning Corp., New York.
Kelvinator Div., American Motors Corp., Detroit, Mich.
Mitchell Mfg. Co., Chicago, Ill.
Philco Corp., Philadelphia, Pa. (Heating element available)
Westinghouse Electric Corp., Electric Appliance Divisions, Columbus, O.

UNITARY AIR CONDITIONERS, WINDOW, FOR DOUBLE-HUNG WINDOWS

Addison Products Co., Addison, Mich.
Admiral Corp., Chicago, Ill. (with heating element)
Albion Div., McGraw-Edison Co., Albion, Mich.
Amana Refrigeration, Inc., Amana, Ia.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y. (heating element included)
Cauhorn Distributing Co., Detroit, Mich.
Chrysler Corp., Airtemp Div., Dayton, O. (with provision for heating element)
Emerson Electric Mfg. Co., The, St. Louis.
Emerson Radio & Phono Corp., Jersey City, N. J.
Fedders Corp., Buffalo, N. Y.
Friedrich Refrigerators, Inc., San Antonio, Tex.
Frigidaire Div., General Motors Corp., Dayton, O.
General Electric Co., Room Air Conditioner Dept., Major Appliance Div., Louisville, Ky
Gibson Refrigerator Co., Greenville, Mich.
Great Northern Mfg. Corp., Chicago, Ill.
Hotpoint, Chicago, Ill. (with heating element)
International Harvester Co., Chicago, Ill.
I. W. Air Conditioning Corp., New York, N. Y.
Kelvinator Div., American Motors Corp., Detroit, Mich.
King Refrigerator Co., Glendale, N. Y.
Mathes Co., The, Div. Glen Alden Corp., Marble Falls, Tex.
Mitchell Mfg. Co., Chicago, Ill.
Philco Corp., Philadelphia, Pa. (heating element available)
Radio Corp. of America, RCA Victor Div., Camden, N. J.
Remington Air Conditioning Div., Remington Corp., Auburn N. Y. (with heating element)
Steam-O-Matic Corp., Sedalia, Mo.
Viking Mfg. Corp., Cleveland, O. (heating element optional)
Vornado, Inc., Garfield, N. J.
Westinghouse Electric Corp., Electric Appliance Divisions, Columbus, O. (with or without heating element)
Whirlpool Corp., St. Joseph, Mich.
York Div., Borg-Warner Corp., York, Pa.

UNITARY AIR CONDITIONERS, WINTER, ROOM TYPE, FLOOR CABINET

Self contained blower, filter, heating coil, humidifier unit

Air Conditioning Engineering Co., Cambridge.
Air & Refrigeration Corp., New York, N. Y.
Auburn Burner Co., Auburn, Ind.
Bal-Air, Inc., Nashvile, Tenn.
Buffalo Forge Co., Buffalo, N. Y.
Campbell Heating Co., Des Moines, Ia.
Clarage Fan Co., Kalamazoo, Mich.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Johnson Co., S. T., Oakland, Calif.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Mitchell Mfg. Co., Chicago, Ill.
Modine Mfg. Co., Racine, Wis.
National-U. S. Radiator Div., Crane Co., Johnston, Pa.
Surface Combustion Corp., Toledo, O.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
U. S. Air Conditioning Corp., Delaware, O.
Viking Mfg. Corp., Cleveland, O.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
York Div., Borg-Warner Corp., York, Pa.

UNITARY AIR CONDITIONERS, YEAR AROUND, FAN-COIL TYPE, FOR INSTALLATION WITH OR WITHOUT CABINET IN ROOM, OR IN CLOSET SPACE, OVER CORRIDOR, ETC.

Comprises Blower, Chilled Water Direct Expansion or Hot Water Coil, for Connection to Remote Compressor or Chilled Water Supply

Acme Industries, Inc., Jackson, Mich.

Air Conditioning Engineering Co., Cambridge.
Airtherm Mfg. Co., St. Louis, Mo.
Amana Refrigeration, Inc., Amana, Ia.
American Comfort Mfg. Co., Evanston, Ill.
American-Standard Plumbing & Heating Div., New York, N. Y.
Arkla Air Conditioning Corp., Little Rock, Ark.
Auburn Burner Co., Auburn, Ind.
Blazer Corp., Passaic, N. J.
Blissfield Mfg. Co., Blissfield, Mich.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Brown Products Corp., Union, N. J.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chicago Steel Furnace Co., Elk Grove, Ill.
Chrysler Corp., Airtemp Div., Dayton, O.
Circle-Air Industries, Inc., Brooklyn, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Deansteel Products Co., San Antonio, Texas
Delco Appliance Div., General Motors Corp., Rochester, N. Y.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders Corp., Heating Div., Trenton, N. J.
Fraser & Johnston Co., San Francisco, Calif.
Friedrich Refrigerators, Inc., San Antonio, Tex.
Heat Controller, Inc., Jackson, Mich.
Ilg Electric Ventilating Co., Chicago, Ill.
International Mfg. Co., Oklahoma City, Okla.
Kritzer Products Div., Peerless of America, Inc., Chicago, Ill.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Mitchell Mfg. Co., Chicago, Ill.
Modine Mfg. Co., Racine, Wis.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Niagara Blower Co., New York, N. Y.
Payne Company, La Puente, Calif.
Peerless of America, Inc., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Refrigeration Appliances, Inc., Chicago, Ill.
Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Temtrol, Inc., Okarche, Okla.
Trane Co., The, La Crosse, Wis.
Tuck-Aire Furnace Co., San Francisco, Calif.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
U. S. Air Conditioning Corp., Delaware, O.
Viking Mfg. Corp., Cleveland, O.
Webster & Co., Warren, Camden, N. J.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Witt Co., A. H., Los Angeles, Calif.
Worthington Corp., Harrison, N. J.
Wright Mfg. Co., Phoenix, Ariz.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITARY AIR CONDITIONERS, YEAR AROUND, HEAT PUMP (Reverse Refrigeration Cycle)

Addison Products Co., Addison, Mich.
Amana Refrigeration, Inc., Amana, Ia.
American-Standard Air Conditioning Div., New York, N. Y. (2, 3 & 5 hp)
Bard Mfg. Co., Bryan, O.
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Century Engineering Corp., Cedar Rapids, Ia.
Chrysler Corp., Airtemp Div., Dayton, O.
Cobell Industries, Inc., Cleburne, Tex.
Drying Systems Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Emerson Radio & Phono Corp., Jersey City, N. J.
Fedders Corp., Buffalo, N. Y.
Flynn Mfg. Co., Michael, Philadelphia, Pa.
Fraser & Johnston Co., San Francisco, Calif.
Frigidaire Div., General Motors Corp., Dayton, O.
Gaffers & Sattler, Los Angeles, Calif.
General Electric Co., Air Conditioning Dept., Tyler, Tex.
General Electric Co., Room Air Conditioner Dept., Major Appliance Div., Louisville, Ky.
Gibson Refrigerator Co., Greenville, Mich.
I.C.E.D., Inc., St. Petersburg, Fla.
International Heater Co., Utica, N. Y.
Lennox Industries Inc., The, Des Moines, Ia.
Marlo Coil Co., St. Louis, Mo.
Mathes Co., The, Div. Glen Alden Corp., Marble Falls, Tex.
McMillan Comfortaire, Inc., Jacksonville, Fla.
Mitchell Mfg. Co., Chicago, Ill.
Mueller Climatrol, Div. of Worthington Corp., Milwaukee, Wis.
Round Oak Div., Peerless Corp., Dowagiac, Mich.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., Los Angeles, Calif.
Trane Co., LaCrosse, Wis.
Tuck-Aire Furnace Co., San Francisco, Calif.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.
Typhoon Heat Pump Div., Hupp Corp., Tampa, Fla.
Weather King of Florida, Inc., Orlando, Fla.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Wright Mfg. Co., Phoenix, Ariz.
York Div., Borg-Warner Corp., York, Pa.

UNITARY AIR CONDITIONERS, YEAR AROUND, ROOM TYPE, FLOOR CABINET

Self contained blower, cooling and heating coil, filter, humidifier unit for connection to remote compressor or cold water supply, and steam or hot water supply

Acme Industries, Inc., Jackson, Mich.
Air Conditioning Engineering Co., Cambridge, Mass.
Air & Refrigeration Corp., New York, N. Y.
Airtherm Mfg. Co., St. Louis, Mo.
Auburn Burner Co., Auburn, Ind.
Bal-Air, Inc., Nashville, Tenn.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Blazer Corp., Passaic, N. J.
Brown Products Corp., Union, N. J.
Buffalo Forge Co., Buffalo, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O.
Circle Air Industries, Inc., Brooklyn, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Dunham-Bush, Inc., West Hartford, Conn.
Fedders Corp., Heating Div., Trenton, N. J.
Hastings Air Control, Inc., Omaha, Nebr.
Ilg Electric Ventilating Co., Chicago, Ill.
International Mfg. Co., Oklahoma City, Okla.
Johnson Co., S. T., Oakland, Calif.
Kramer Trenton Co., Trenton, N. J.
Kritzer Radiant Coils, Inc., Batavia, Ill.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Nesbitt, Inc., John J., Philadelphia, Pa.
Niagara Blower Co., New York, N. Y.
Refrigeration Appliances, Inc., Chicago, Ill.
Rittling Corp., The, Buffalo, N. Y.
Trane Co., The, La Crosse, Wis.
Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y
U. S. Air Conditioning Corp., Delaware, O.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
Westcott Snyder Mfg. Corp., Madison, N. J.
Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.
Worthington Corp., Harrison, N. J.
York Div., Borg-Warner Corp., York, Pa.
Young Radiator Co., Racine, Wis.

UNITARY AIR CONDITIONERS, YEAR AROUND, ROOM TYPE, FLOOR CABINET

Self Contained Compressor, Blower, Filter, Cooling Coils and Heating Coils for Connection to Steam or Hot Water Supply

American-Standard Plumbing & Heating Div., New York, N. Y.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chrysler Corp., Airtemp Div., Dayton, O.
Curtis Mfg. Co., Refrigeration Div., St. Louis, Mo.
Dialatemp, Inc., St. Louis, Mo.
Modine Mfg. Co., Racine, Wis.
National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Webster & Co., Warren, Camden, N. J.
Welbilt Air Conditioning & Heating Corp., Farmingdale, N. J.
York Div., Borg-Warner Corp., York, Pa.

UNITARY AIR CONDITIONERS, YEAR AROUND, ROOM TYPE, FLOOR CABINET, INDUCTION

Self-Contained Cooling and Heating Coil, Filter, Etc. for Connection to High Pressure Primary Air Supply, Cold Water Supply, and Hot Water Supply

American-Standard Industrial Div., Detroit, Mich.
Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Nesbitt, Inc., John J., Philadelphia, Pa.
Trane Co., The, La Cross. Wis.
York Div., Borg-Warner Corp., York, Pa.
Worthington Corp., Harrison, N. J.

UNITS, AIR CONDITIONING

See Unitary Air Conditioners

UNITS, CONDENSATE DISPOSAL, FOR AIR CONDITIONING

See Pumps, Condensate, For Removing Condensation from Air Conditioning Units

UNITS, EXHAUSTER, CENTRIFUGAL FAN

Airfan Engineering Co., Los Angeles, Calif.
Ammerman Co., Inc., Stillwater, Minn.
Barry Blower Co., Minneapolis, Minn.
Brundage Co., The, Kalamazoo, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Carnes Corp., Verona, Wis.
Clarage Fan Co., Kalamazoo, Mich.
Garden City Fan & Blower Co., Niles, Mich.
General Blower Co., Subsid. of Ilg Electric Ventilating Co., Morton Grove, Ill.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Jenn-Air Products Co., Indianapolis, Ind.
Master Fan Corp., Los Angeles, Calif.
Midwesco, Inc., Chicago, Ill.
Nesbitt Co., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Power Engineering Corp., Mingo Jct., O.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Quickdraft Corp., Canton, O.
Robinson Ventilating Co., Zelienople, Pa.
Sutton Mfg. Co., Norfolk, Va.
U. S. Air Conditioning Corp., Delaware, O.

UNITS, FUEL OIL, HEATING, PUMPING AND STRAINING

Ace Engineering Co., Chicago, Ill.
Alco Products, Inc., Schenectady, N. Y.
Barclay, Inc., Robert, Chicago, Ill.
Best Combustion Equipment Co., Inc., W. N., Little Ferry, N. J.
Cleaver-Brooks Co., Milwaukee, Wis.
Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Drying Systems Co., Chicago, Ill.
Eagan Co., Inc., Walter H., Philadelphia, Pa.
Engineer Co., New York, N. Y.
Faber Engineer Co., Inc., Norristown, Pa.
Hauck Mfg. Co., Brooklyn, N. Y.
Hite Mfg. Co., N. E., Chicago, Ill.
Iron Fireman Mfg. Co., Cleveland, O.
Leahy Mfg. Co., Los Angeles, Calif.
Lientz Co., B. P., Kansas City, Mo.
National Airoil Burner Co., Inc., Philadelphia, Pa.
Northern Ordnance Inc., Subsidiary of Northern Pump Co., Minneapolis, Minn.

Peabody Engineering Corp., New York, N. Y.
Petro, Cleveland, O.
Preferred Utilities Mfg. Corp., New York, N. Y.
Ray Oil Burner Co., San Francisco, Calif.
Reliable Products Mfg. Co., Inc., Brooklyn, N. Y.
Schurs Burner & Equipment, Inc., South Gate, Calif.
Staples & Pfeiffer, San Francisco, Calif.
Todd Shipyards Corp., Products Div., Brooklyn, N. Y.
Tuthill Pump Co., Chicago, Ill.
Warner Lewis Co., Div. of Fram Corp., Tulsa, Okla.
Webster Electric Co., Racine, Wis.
Wiegand Co., Edwin L., Pittsburgh, Pa. (electric)
Wilson Engineering Corp., Chicago, Ill.
Yula Corp., Bronx, N. Y.

UNITS, HEAT RECOVERY, AIR-TO-AIR

Catalytic Combustion Corp., Detroit, Mich.
Therm-O-Wheel, Inc., Long Island City, N. Y.

UNITS, HEATING AND VENTILATING, HORIZONTAL PACKAGE TYPE

Aerovent Fan Co., Inc., Piqua, O.
Airfan Engineering Co., Los Angeles, Calif.
Airtherm Mfg. Co., St. Louis, Mo.
Arkos Mfg. Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Campbell Co., E. K., Kansas City, Mo.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chicago Steel Furance Co., Elk Grove, Ill.
Clarage Fan Co., Kalamazoo, Mich.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Kennard Products, American Air Filter Co., Inc., Louisville, Ky
Mammoth Industries, Inc., Minneapolis, Minn. (roof top series)
Master Fan Corp., Los Angeles, Calif.
McQuay, Inc., Minneapolis, Minn.
Modine Mfg. Co., Racine, Wis.
Nesbitt Co., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Recold Corp., Los Angeles, Calif.
Rittling Corp., The, Buffalo, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Temtrol, Inc., Okarche, Okla.
Thermal Engineering Corp., Houston, Tex.
Valveblower Co. of Calif., Santa Fe Springs, Calif.

UNITS, MAKEUP AIR, HEATING AND VENTILATING, HORIZONTAL PACKAGE TYPE, DIRECT-FIRED, GAS

(For Furnishing Preheated Outdoor Air to Replace Exhausted Air)

Aerovent Fan Corp., Piqua, O.
Arkos Mfg. Co., Detroit, Mich.
Burdett Mfg. Co., Chicago, Ill.
Campbell, Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chicago Steel Furnace Co., Elk Grove, Ill.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Hartzell Propeller Fan Co., Piqua, O.
Jackson & Church Co., Saginaw, Mich.
Johnson Heater Corp., Chelsea, Mass.
Lennox Industries, Inc., Des Moines, Ia.
Mammoth Industries, Inc., Minneapolis, Minn. (roof top series)
National Heater Co., Inc., St. Paul, Minn.
Norman Products Co., Inc., Columbus, O.
Tjernlund Mfg. Co., St. Paul, Minn.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

UNITS, MAKEUP AIR, HEATING AND VENTILATING, HORIZONTAL PACKAGE TYPE, DIRECT-FIRED, OIL

(For Furnishing Preheated Outdoor Air to Replace Exhausted Air)

Aerovent Fan Corp., Piqua, O.
Arkos Mfg. Co., Detroit, Mich.
Campbell Co., E. K., Kansas City, Mo.
Campbell Heating Co., Des Moines, Ia.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Chicago Steel Furnace Co., Elk Grove, Ill.
Dravo Corp., Machinery Div., Pittsburgh, Pa.
Jackson & Church Co., Saginaw, Mich.
Johnson Heater Corp., Chelsea, Mass.
Mammoth Industries, Inc., Minneapolis, Minn. (roof top series)
National Heater Co., Inc., St. Paul, Minn.
Tjernlund Mfg. Co., St. Paul, Minn.

UNITS, MAKEUP AIR, HEATING AND VENTILATING, HORIZONTAL PACKAGE TYPE, STEAM OR HOT WATER

(For Furnishing Preheated Outdoor Air to Replace Exhausted Air)

Airfan Engineering Co., Los Angeles, Calif.
Airtherm Mfg. Co., St. Louis, Mo.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Clarage Fan Co., Kalamazoo, Mich.
Hartzell Propeller Fan Co., Piqua, O.
Marlo Coil Co., St. Louis, Mo.
McQuay, Inc., Minneapolis, Minn.
Nesbitt, Inc., John J., Philadelphia, Pa.
New York Blower Co., Chicago, Ill.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

UNITS, MIXING, SOUND AND VOLUME CONTROL, FOR DOUBLE DUCT HIGH VELOCITY AIR CONDITIONING SYSTEM

Air Devices, Inc., New York, N. Y.
Anemostat Corp. of America, New York, N. Y.
Barber-Colman Co., Rockford, Ill.
Buensod-Stacey Corp., New York, N. Y.
Carnes Corp., Verona, Wis.
Connor Engineering Corp., Danbury, Conn.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
HI-PRESS Air Conditioning of America, Inc., New York, N. Y.
Thermotank, Inc., Air Products Div., Detroit, Mich.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.

UNITS, STERILIZING, AIR

Atlantic Ultraviolet Co., Inc., Long Island City, N. Y.
Barnebey-Cheney Co., Columbus, O. (with activated charcoal)
Cambridge Filter Corp., Syracuse, N. Y.
Cooper Hewitt Electric Co., Div. of Sperti Faraday, Inc., Hoboken, N. J.
Fuller Co., D. William, Chicago, Ill.
Germatrol Corp., Pittsburgh, Pa.
Hanovia Lamp Div., Engelhard Hanovia, Inc., Newark, N. J.
Sampson Scientific Co., Div. of the Sampson Chemical & Pigment Corp., Chicago, Ill.
Sperti Faraday, Inc., Hoboken, N. J.

UNITS, STERILIZING, WATER

Barnstead Still & Sterilizer Co., Boston, Mass.
Hanovia Lamp Div., Engelhard Hanovia, Inc., Newark, N. J.

UNITS, WINDOW VENTILATOR AND FILTER

Airgard Mfg. Co., Chicago, Ill.
Gaffers & Sattler, Los Angeles, Calif.
Ilg Electric Ventilating Co., Chicago, Ill.
Pollen Ex Co., Chicago, Ill.
Reed Unit-Fans, Inc., New Orleans, La.
Standard Electric Mfg. Co., West Berlin, N. J.

UNIVERSAL JOINTS

See Joints, Universal, for Operating Valves

VACUUM CLEANERS FOR BOILERS

See Cleaners, Vacuum, for Boilers

VACUUM CLEANING SYSTEMS, FITTINGS FOR

See Fittings for Central Vacuum Cleaning Systems

VACUUM GAGES

See Gages, Indicating, Vacuum

VACUUM HEATING SYSTEMS

See System, Heating, Vacuum

VACUUM PUMPS

See Pumps, Vacuum

VACUUM RECORDERS

See Recorders, Pressure and Vacuum

VALVE COVERS

See Covers, Protective, Valve and Flange

VALVE OPERATORS

See Operators, Valve

VALVE REPAIR KITS

See Kits, Repair for Pipes, Tanks, Valves, Flanges, and Ducts

VALVE RESEATERS

See Reseaters, Valve

VALVES, AIR OPERATING

Airmatic Valve, Inc., Cleveland, O.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Moistening Co., Cleveland, N. C.
Associated Valve Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Barksdale Valves, Los Angeles, Calif.
Binks Mfg. Co., Chicago, Ill.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Cash Co., A. W., Decatur, Ill.
Century Instrument Co., Detroit, Mich.
Clark Controller Co., Cleveland, O.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Dahl, Co., Inc., G. W., Bristol, R. I.
Darling Valve & Mfg. Co., Williamsport, Pa.
Davis Regulator Co., Chicago, Ill.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
De Zurik Corp., Sartell, Minn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Edward Valves, Inc., East Chicago, Ind.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Farris Flexible Valve Corp., Palisades Park, N. J.
Fischer & Porter Co., Warminster, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Gardner-Denver Co., Quincy, Ill.
General-American Valve Co., Corona Del Mar, Calif.
General Controls Co., Glendale, Calif.
General Kinetics Corp., Englewood, N. J.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hanna Engineering Wks., Chicago, Ill.
Hannifin Co., A Div. of Parker-Hannifin Corp., DesPlaines, Ill.
Hills-McCanna Co., Chicago, Ill.
Hoffman Valves, Dayton, O.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hunt Valve Co., Div. of IBEC, Salem, O.
Keckley Co., O. C., Skokie, Ill.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Ledeen Mfg. Co., El Monte, Calif.
Leslie Co., Lyndhurst, N. J.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Modern Engineering Co., St. Louis, Mo.
Norgren Co., C. A., Englewood, Colo.
OPW-Jordan Corp., Cincinnati, O.
Pacific Valves, Inc., Long Beach, Calif.
Philadelphia Gear Corp., King of Prussia, Pa.
Powell Co., Wm., The, Cincinnati, O.
Powers Regulator Co., Skokie, Ill.
RKL Controls, Inc., Hainesport, N. J.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Republic Mfg. Co., Cleveland, O.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Rockwell Co., W. S., Fairfield, Conn.
Rockwood Sprinkler Co., Worcester, Mass.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Squires Co., C. E., The, Cleveland, O.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Uniflow Valve Corp., Cranford, N. J.
Velan Valve Corp., Plattsburgh, N. Y.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Walworth Co., New York, N. Y.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, ALTITUDE

Atlas Valve Co., Newark, N. J.
Bailey Co., Charles M., San Francisco, Calif.
Cash Co., A. W., Decatur, Ill.
Cla-Val Co., Newport Beach, Calif.
Davis Regulator Co., Chicago, Ill.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa
Ross Valve Mfg. Co., Inc., Troy, N. Y.

VALVES, ANGLE

Alloy Steel Products Co., Linden, N. J. (Stainless steel)
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bordo Co., Inc., L. J., Glenside, Pa. (Plug)
California Brass Mfg Co., Los Angeles, Calif.
Cash Co., A. W., Decatur, Ill.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Cla-Val Co., Newport Beach, Calif.
Cleveland Brass Mfg. Co. The Kinsman, O.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Dersch, Gesswein & Neuert, Inc., Chicago.
Deutsch Controls Corp., Los Angeles, Calif.
Duriron Co., The, Dayton, O. (corrosion resisting)
Edward Valves, Inc., East Chicago, Ind.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Fairbanks Co., The, New York, N. Y.
Farris Engineering Corp., Palisades Park, N. J.
Frick Co., Waynesboro, Pa.
Gas Machinery Co., Cleveland, O.
General American Valve Co., Corona Del Mar, Calif.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (porcelain; plastic, alumina)
General Controls Co., Glendale, Calif. and Skokie, Ill.
Greer Hydraulics, Inc., Los Angeles, Calif.
Grinnell Co., Inc., Providence, R. I.
Grove Valve and Regulator Co., Oakland, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hammond Valve Corp., Hammond, Ind.
Haveg Industries, Inc., Wilmington, Del. (plastic and plastic body)
Henry Valve Co., Melrose Park, Ill.
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Imperial-Eastman Corp., Chicago, Ill.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Corp., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Lunkenheimer Co., Cincinnati, O.
Luzerne Rubber Co., Trenton, N. J. (Hard Rubber)
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milwaukee Valve Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Morse-Smith-Morse, Inc., Watertown, Mass.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
OPW-Jordan Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Pacific Valves, Inc., Long Beach, Calif.
Pittsburgh Valve Co., Reedsville, W. Va.
Powell Co., Wm., Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Sarcotherm Controls, Inc., New York, N.Y.
Schaible Co., The, Mariemont, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Squires Co., C. E., The, Cleveland, O.
Stockham Valves & Fittings, Birmingham, Ala.
Strahman Valves, Inc., Florham Park, N. J.
Superior Valve & Fittings Co., Pittsburgh.
Uniflow Valve Corp., Cranford, N. J.
Vacuum-Electronic Engineering Co., New Hyde Park, L. I., N. Y.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Vanton Pump & Equipment Corp., Hillside, N. J. (plastic)
Velan Valve Corp., Plattsburgh, N. Y.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
White Flomatic Div., Flomatic Corp., Hoosick Falls, N. Y.

VALVES, AUTOMATIC SHUTOFF WITH MANUAL RESET

Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Baso, Inc., Milwaukee, Wis.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Cameron Iron Works, Inc., Houston, Tex.
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Cla-Val Co., Newport Beach, Calif.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Coppus Engineering Corp., Worcester, Mass.
Dahl Co., Inc., G. W., Bristol, R. I.
Davis Regulator Co., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electronics Corp. of America, Cambridge, Mass.
Everlasting Valve Co., Jersey City, N. J.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
General Kinetics Corp., Englewood, N. J.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Maxon Premix Burner Co., Muncie, Ind.
McQuay-Norris Mfg. Co., St. Louis, Mo.
McRae Specialty Co., Don, Glendale, Calif.
North American Mfg. Co., Cleveland, O.
OPW-Jordan Corp., Cincinnati, O.
Patrol Valve Co., The, Cleveland, O.
Penn Controls, Inc., Goshen, Ind.
Rockwell Co., W. S., Fairfield, Conn.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Security Valves Corp., So. Pasadena, Calif.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sullivan Valve & Engineering Co., Butte, Mont.
Thermac Co., Corona, Calif.
Valco, Inc., Cincinnati, O.
Valcor Engineering Corp., Kenilworth, N. J.
Watts Regulator Co., Lawrence, Mass.
White-Rodgers Co., St. Louis, Mo.

VALVES, AUTOMATIC, STOP AND CHECK

Chatleff Valve & Mfg. Co., Austin, Tex.
Cla-Val Co., Newport Beach, Calif.
Crane Co., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fairbanks Co., The, New York, N. Y.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Lunkenheimer Co., Cincinnati, O.
McAlear Mfg. Co., Chicago, Ill.
OPW-Jordan Corp., Cincinnati, O.
Powell Co., The Wm., Cincinnati, O.
Scott Valve Mfg. Co., Detroit, Mich.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Velan Valve Corp., Plattsburgh, N. Y.

VALVES, BACK PRESSURE

American-Standard Controls Div., Detroit, Mich.
Associated Valve Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Charles M., San Francisco, Calif.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Cameron Iron Works, Inc., Houston, Tex.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Cochrane Corp., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Dahl Co., Inc., G. W., Bristol, R. I.
Davis Regulator Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Farris Engineering Corp., Palisades Park, N. J.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Granberg Corp., Subsid. of American Meter Co., Inc., Oakland, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hersey-Sparling Meter Co., Dedham, Mass.
Hubbell Corp., Mundelein, Ill.
Josam Manufacturing Co., Michigan City, Ind.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
OPW-Jordan Corp., Cincinnati, O.
Pokorney Mfg. Co., Franklin Park, Ill.
Refrigerating Specialties Co., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Schancke, Inc., Evansville, Ind.
Schutte and Koerting Co., Buck County, Pa.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Stickle Steam Specialties Co., Indianapolis, Ind.

Stockham Valves & Fittings, Birmingham, Ala.
Temprite Products Corp., Birmingham, Mich.
Uniflow Valve Corp., Cranford, N. J.
Zurn Industries, Inc., Erie, Pa.

VALVES, BALANCING, FOR FORCED HOT WATER HEATING SYSTEMS

American-Standard Controls Div., Detroit, Mich.
American Tube & Controls, Inc., West Warwick, R. I.
Bell & Gossett Co., Morton Grove, Ill.
DeZurik Corp., Sartell, Minn.
Eagle Copper Products Co., Inc., Brooklyn.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
G & H Mfg. Co., Philadelphia, Pa.
Hammond Valve Corp., Hammond, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Maid-O'-Mist, Inc., Chicago, Ill.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
Milwaukee Valve Co., Milwaukee, Wis.
Modern Flo-Trol Products Corp., Babylon, N. Y.
Ohio Brass Co., Mansfield, O.
Panel Heat, Inc., Copiague, N. Y.
Quality Specialty Co., Inc., Camden, N. J.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, La Crosse, Wis.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Watts Regulator Co., Lawrence, Mass.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

VALVES, BALL TYPE

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Cameron Iron Works, Inc., Houston, Tex.
Cardox Corp., Chicago, Ill.
Carpenter Sales Corp., Cleveland, O.
Cash Co., A. W., Decatur, Ill.
Chemtrol, Plastic Piping Systems Equipment, Santa Ana, Calif. (plastic)
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Cooper Alloy Corp., Hillside, N. J.
Edward Valves, Inc., East Chicago, Ind.
Fairbanks Co., The, New York, N. Y.
General Kinetics Corp., Englewood, N. J.
Greer Hydraulics, Inc., Los Angeles, Calif.
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hydromatics, Inc., Livingston, N. J.
Jamesbury Corp., Worcester, Mass.
Klipfel Valves, Inc., Hamilton, O.
Lunkenheimer Co., Cincinnati, O.
Milwaukee Valve Co., Milwaukee, Wis.
Multiplex Mfg. Co., Berwick, Pa.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
P-K Industries, Inc., North Arlington, N. J.
Powell Co., The Wm., Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.
Rockwood Sprinkler Co., Worcester, Mass.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Walworth Co., New York, N. Y.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, BAR STOCK

Alloy Steel Products Co., Linden, N. J. (stainless steel)
Associated Valve Co., North Wales, Pa.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Autoclave Engineers Sales Corp., Erie, Pa.
Carpenter Sales Corp., Cleveland, O.
Cash Co., A. W., Decatur, Ill.
Circle Seal Products Co., Inc., Pasadena, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Deutsch Controls Corp., Los Angeles, Calif.
Farris Engineering Corp., Palisades Park, N. J.
Foxboro Co., Foxboro, Mass.
General-American Valve Co., Corona Del Mar, Calif.
General Kinetics Corp., Englewood, N. J.
Greer Hydraulics, Inc., Los Angeles, Calif.
Grove Valve and Regulator Co., Oakland, Calif.
Guardian Products Corp., Michigan City, Ind.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Henry Valve Co., Melrose Park, Ill.
Hunt Valve Co., Div. of IBEC, Salem, O.
Jamesbury Corp., Worcester, Mass.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, O.
National Airoil Burner Co., Inc., Philadelphia.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Rockwood Sprinkler Co., Worcester, Mass.
Shank Co., Cyrus, Chicago, Ill.
Star Stainless Screw Co., Paterson, N. J.
Uehling Instrument Co., Paterson, N. J.
Uniflow Valve Corp., Cranford, N. J.
Vacuum-Electronic Engineering Co., New Hyde Park, L. I., N. Y.
Walworth Co., New York, N. Y.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

VALVES, BLOW-OFF

Bordo Co., Inc., L. J., Glenside, Pa.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Crane Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Edward Valves, Inc., East Chicago, Ind.
Everlasting Valve Co., Jersey City, N. J.
Fairbanks Co., The, New York, N. Y.
Gato Valve Co., Pittsburgh, Pa.
General-American Valve Co., Corona Del Mar, Calif.
General Kinetics Corp., Englewood, N. J.
Henszey Co., Watertown, Wis.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Imperial-Eastman Corp., Chicago, Ill.
Jenkins Bros., New York, N. Y.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Madden Corp., The, Chicago, Ill.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Norgren Co., C. A., Englewood, Colo.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Shank Co., Cyrus, Chicago, Ill.
Strong, Carlisle & Hammond, Conneaut, O.
Velan Valve Corp., Plattsburgh, N. Y.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES, BOILER, NON-RETURN

Crane Co., Chicago, Ill.
Edward Valves, Inc., East Chicago, Ind.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Lunkenheimer Co., Cincinnati, O.
McAlear Mfg. Co., Chicago, Ill.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Schutte & Koerting Co., Buck County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York, N. Y.

VALVES, BRAZED END

Fairbanks Co., The, New York, N. Y.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn
Hammond Valve Corp., Hammond, Ind.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jenkins Bros., New York, N. Y.
Lunkenheimer Co., Cincinnati, O.
Milwaukee Valve Co., Milwaukee, Wis.
Ohio Brass Co., Mansfield, O.
Pittsburgh Valve Co., Reedsville, W. Va.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Superior Valve & Fittings Co., Pittsburgh.
Walworth Co., New York, N. Y.

VALVES, BUTTERFLY

Airaterra (Roylyn Products), Glendale, Calif.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
B-I-F Industries, Builders-Providence Div., Providence, R.I.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
Davis Regulator Co., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Econo Products Company Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Fabri-Valve Co. of America, Portland, Ore.
Fisher Governor Co., Marshalltown, Ia.
Foxboro Co., Foxboro, Mass.
Gas Machinery Co., Cleveland, O.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (chemical stoneware, plastic)
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hauck Mfg. Co., Brooklyn, N. Y.
Keystone Valve Corp., Houston, Tex.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y. (all iron for gas service 16 in. and up)
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
National Valve & Mfg. Co., Pittsburgh, Pa.
North American Mfg. Co., Cleveland, O.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Powell Co., Wm., The, Cincinnati, O.
Pratt Co., Henry, Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schurs Burner & Equipment, Inc., South Gate, Calif.
Schutte & Koerting Co., Buck County, Pa.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.
Worthington Corp., Harrison, N. J.
Yuba Mfg. Div., Yuba Consolidated Industries, Inc., Benicia, Calif.

VALVES, BYPASS, WITH PROVISIONS FOR SOME CIRCULATION WHEN CLOSED

Chatleff Valve & Mfg. Co., Austin, Tex.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Dahl Co., Inc., G. W., Bristol, R. I.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jenkins Bros., New York, N. Y.
Lunkenheimer Co., Cincinnati, O.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Morrison Brothers Co., Dubuque, Ia.
Mueller Brass Co., Port Huron, Mich.
Ohio Brass Co., Mansfield, O.
Powell Co., Wm., The, Cincinnati, O.
Ranco Incorporated, Columbus, O.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Schutte & Koerting Co., Buck County, Pa.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Stockham Valves & Fittings, Birmingham, Ala.
Uniflow Valve Corp., Cranford, N. J.
Velan Valve Corp., Plattsburgh, N. Y.

VALVES, CHECK

Airaterra (Roylyn Products), Glendale, Calif.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Alloy Steel Products Co., Linden, N. J. (stainless steel)
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Hard rubber)

American-Standard Controls Div., Detroit, Mich.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich. (Refrigeration)
Anderson Brass Co., Detroit, Mich.
Associated Valve Co., North Wales, Pa.
Autoclave Engineers Sales Corp., Erie, Pa.
Barrett Haentjens & Co., Hazleton, Pa.
Beacon Brass Co., Waltham, Mass.
Catawissa Valve & Fittings Co., Catawissa, Pa.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Chatleff Valve & Mfg. Co., Austin, Tex.
Chemtrol, Plastic Piping Systems Equipment, Santa Ana, Calif. (plastic)
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Cochrane Corp., Philadelphia, Pa.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Combination Pump Valve Co., Philadelphia.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Darling Valve & Mfg. Co., Williamsport, Pa.
Davis Regulator Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Durabla Mfg. Co., New York, N. Y.
Duriron Co., Inc., The, Dayton, O. (corrosion resisting)
Dynametrics Corp., Burlington, Mass.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eddy Valve Co., Waterford, N. Y.
Edward Valves, Inc., East Chicago, Ind.
Fabri-Valve Co. of America, Portland, Ore.
Fairbanks Co., The, New York, N. Y.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Gas Machinery Co., Cleveland, O.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (ceramics)
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Greer Hydraulics, Inc., Los Angeles, Calif.
Grinnell Co., Inc., Providence, R. I.
Hammond Valve Corp., Hammond, Ind.
Harman Equipment Co., Los Angeles, Calif.
Henry Valve Co., Melrose Park, Ill.
Hersey-Sparling Meter Co., Dedham, Mass.
Imperial-Eastman Corp., Chicago, Ill.
Integral Corp., Hicksville, Long Island, N. Y.
Jenkins Bros., New York, N. Y.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Kepner Products Co., Summit, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Keystone Valve Corp., Houston, Tex.
LaBour Co., Inc., The, Elkhart, Ind.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rubber lined and PVC)
Lead Lined Iron Pipe Co., Wakefield, Mass. (Lead lined)
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Luzerne Rubber Co., Trenton, N. J. (Hard rubber & rigid PVC)
Manning, Maxwell & Moore, Inc., Stratford, Conn
Mansfield & Green Inc., Cleveland, O.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Miller Valve Co., Inc., Pittsburgh, Pa. (Silent)
Milwaukee Valve Co., Milwaukee, Wis.
Morse-Smith-Morse, Inc., Watertown, Mass.
Mueller Brass Co., Port Huron, Mich.
Myers & Bro. Co., F. E., The, Ashland, O.
Nuclear Products Co., Cleveland, O.
OPW-Jordan Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Pacific Valves, Inc., Long Beach, Calif.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Phillips & Co., H. A., Chicago, Ill.
Pokorney Mfg. Co., Franklin Park, Ill.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Remco, Inc., Zelienople, Pa. (high pressure & low pressure)
Republic Mfg. Co., Cleveland, O.
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Schaible Co., The, Mariemont, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Sealed Unit Parts Co., Inc., New York, N. Y.
Sealol Inc., Providence, R. I.
Security Valves Corp., So. Pasadena, Calif.
Shank Co., Cyrus, Chicago, Ill.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Smolensky Valve Co., Bedford, O.
Stockham Valves & Fittings, Birmingham, Ala.
Sullivan Valve & Engineering Co., Butte, Mont.
Superior Valve and Fittings Co., Pittsburgh.
Techno Corp., Erie, Pa.
Temprite Products Corp., Birmingham, Mich.
Tesco, Inc., Tulsa, Okla.
Universal Valve Co., Elizabeth, N. J.
Valves, Inc., F. G., Milwaukee, Wis.
Vanton Pump & Equipment Corp., Hillside, N. J. (plastic)
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York, N. Y.
Watkins Co., J. E., Maywood, Ill.
Watsco, Inc., Hialeah, Fla.
Watts Regulator Co., Lawrence, Mass.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.
Williams Gauge Co., Inc., The, Pittsburgh, Pa. (silent)

VALVES, CHECK, BRONZE

Airaterra (Roylyn Products), Glendale, Calif.
American-Standard Controls Div., Detroit.
Anderson Brass Co., Detroit, Mich.
Barrett Haentjens & Co., Hazleton, Pa.
Campbell Mfg. Co., Inc., Boyertown, Pa.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill
Combination Pump Valve Co., Philadelphia.
Crane Co., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fairbanks Co., The, New York, N. Y.
Fine Products Co., Berwyn, Ill.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Grinnell Co., Inc., Providence, R. I.
Grove Valve & Regulator Co., Oakland, Calif.
Hammond Valve Corp., Hammond, Ind.
Henry Valve Co., Melrose Park, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Ladish Co., Cudahy, Wis.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Valve Co., Dunkirk, N. Y.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Miller Valve Co., Inc., Pittsburgh, Pa.
Milwaukee Valve Co., Milwaukee, Wis.
Modern Flo-Trol Products Corp., Babylon, N. Y.
Morrison Brothers Co., Dubuque, Ia.
Morse-Smith-Morse Co., The, Watertown, Mass.
Mueller Brass Co., Port Huron, Mich.
Myers & Bro. Co., F. E., The, Ashland, O.
Nibco, Inc., Elkhart, Ind.
OPW-Jordan Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Pacific Valves, Inc., Long Beach, Calif.
Pittsburgh Valve Co., Reedsville, W. Va.
Pokorney Mfg. Co., Franklin Park, Ill.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Rockford Brass Works, Rockford, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Schaible Co., The, Mariemont, O.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Sealol Inc., Providence, R. I.
Sims Pump Valve Co., Hoboken, N. J.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Smolensky Valve Co., Bedford, O.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Tesco, Inc., Tulsa, Okla.
Valves, Inc., F. G., Milwaukee, Wis.
Walworth Co., New York, N. Y.
Watts Regulator Co., Lawrence, Mass.
White Flomatic Div., Flomatic Corp., Hoosick Falls, N. Y.
Williams Gauge Co., Inc., Pittsburgh, Pa.

VALVES, CHECK — CHECK UNIT ONLY, FOR USE WITH PIPE FITTINGS

Circle Seal Products Co., Inc., Pasadena, Calif.
Clayton Mark & Co., Evanston, Ill.
Durabla Mfg. Co., New York, N. Y.
Harman Equipment Co., Los Angeles, Calif.
Mission Valve & Pump Co., Houston, Tex.
OPW-Jordan Corp., Cincinnati, O.
Superior Valve & Fittings Co., Pittsburgh, Pa.

VALVES, CHECK, IRON

Airaterra (Roylyn Products), Glendale, Calif.
Barrett Haentjens & Co., Hazleton, Pa.
Catawissa Valve & Fittings Co., Catawissa, Pa.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Clow & Sons, Inc., James B., Chicago, Ill.
Combination Pump Valve Co., Philadelphia.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fairbanks Co., The, New York, N. Y.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Frick Co., Waynesboro, Pa.
Grinnell Co., Inc., Providence, R. I.
Grove Valve & Regulator Co., Oakland, Calif.
Henry Valve Co., Melrose Park, Ill.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y. (body bronze trimmed)
Lunkenheimer Co., Cincinnati, O.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
McDonald Mfg. Co., A.Y., Dubuque, Ia.
Miller Valve Co., Inc., Pittsburgh, Pa.
Modern Flo-Trol Products Corp., Babylon, N. Y.
Mueller Co., Decatur, Ill.
OPW-Jordan Corp., Cincinnati, O.
Ohio Injector Co., Wadsworth, O.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Phillips & Co., H. A., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Reading, Pa.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Saran Lined Pipe Co., Ferndale, Mich. (saran lined)
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Sealol Inc., Providence, R. I.
Shank Co., Cyrus, Chicago, Ill.
Smolensky Valve Co., Bedford, O.
Stockham Valves & Fittings, Birmingham, Ala.
Techno Corp., Erie, Pa.
Tesco, Inc., Tulsa, Okla.
Valves, Inc., F. G., Milwaukee, Wis.
Vilter Mfg. Co., The, Milwaukee, Wis.
Walworth Co., New York, N. Y.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.

VALVES, CHECK, STEEL

Airaterra (Roylyn Products), Glendale, Calif.
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Associated Valve Co., North Wales, Pa.
Cameron Iron Works, Inc., Houston, Tex.
Catawissa Valve & Fittings Co., Catawissa, Pa.

Chapman Valve Mfg. Co., The, Springfield, Mass.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Combination Pump Valve Co., Philadelphia.
Crane Co., Chicago, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Edward Valves, Inc., East Chicago, Ind.
Fabri-Valve Co. of America, Portland, Ore.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Greer Hydraulics, Inc., Los Angeles, Calif.
Grove Valve & Regulator Co., Oakland, Calif.
Henry Valve Co., Melrose Park, Ill.
Jenkins Bros., New York, N. Y.
Kepner Products Co., Summit, Ill.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mansfield & Green, Inc., Cleveland, O.
Miller Valve Co., Inc., Pittsburgh, Pa.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Pacific Valves, Inc., Long Beach, Calif.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Saran Lined Pipe Co., Ferndale, Mich. (saran lined)
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Sealol Inc., Providence, R. I.
Security Valves Corp., So. Pasadena, Calif.
Smolensky Valve Co., Bedford, O.
Stockham Valves & Fittings, Birmingham, Ala.
Techno Corp., Erie, Pa.
Tesco, Inc., Tulsa, Okla.
Velan Valve Corp., Plattsburgh, N. Y.
Vernon Tool Co., Ltd., Alhambra, Calif.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Watkins Co., J. E., Maywood, Ill.
Williams Gauge Co., Inc., The, Pittsburgh.

VALVES, COMPRESSOR

Binks Mfg. Co., Chicago, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Circle Seal Products Co., Inc., Pasadena, Calif.
Detroit Stamping Co., Detroit, Mich.
Farris Engineering Corp., Palisades Park, N. J.
Frick Co., Waynesboro, Pa.
Henry Valve Co., Melrose Park, Ill.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, O.
Mueller Brass Co., Port Huron, Mich.
OPW-Jordan Corp., Cincinnati, O.
Ohio Injector Co., Wadsworth, O.
Pennsylvania Pump & Compressor Co., Easton, Pa.
Pokorney Mfg. Co., Franklin Park, Ill.
Powell Co., The Wm., Cincinnati, O.
Shank Co., Cyrus, Chicago, Ill.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Vilter Mfg. Co., The, Milwaukee, Wis.
Voss Co., J. H. H., Inc., New York, N. Y. (suction and discharge)
Watsco, Inc., Hialeah, Fla.
Williams Gauge Co., Inc., The, Pittsburgh,

VALVES, CONTINUOUS BOILER BLOWDOWN

Cochrane Corp., Philadelphia, Pa.
General-American Valve Co., Corona Del Mar, Calif.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Kaye & MacDonald, Inc., West Orange, N. J.

VALVES, CYLINDER OPERATED

Airmatic Valve Inc., Cleveland, O.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Alloy Steel Products Co., Linden, N. J. (stainless steel)
Associated Valve Co., North Wales, Pa.
Automatic Switch Co., Florham Park, N. J.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Cardox Corp., Chicago, Ill.
Cash Co., A. W., Decatur, Ill.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Clow & Sons, Inc., James B., Chicago, Ill.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Darling Valve & Mfg. Co., Williamsport, Pa.
De Zurik Corp., Sartell, Minn.
Eddy Valves Co., Waterford, N. Y.
Everlasting Valve Co., Jersey City, N. J.
Fabri-Valve Co. of America, Portland, Ore.
Fischer & Porter Co., Warminster, Pa.
Foxboro Co., Foxboro, Mass.
General-American Valve Co., Corona Del Mar, Calif.
General Controls Co., Glendale, Calif.
General Kinetics Corp., Englewood, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hamer Valves Inc., Long Beach, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hill Machine Co., Rockford, Ill. (for control of fuel oil to nozzles)
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hunt Valve Co., Div. of IBEC, Salem, O.
Jamesbury Corp., Worcester, Mass.
Jenkins Bros., New York, N. Y.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Pacific Valves, Inc., Long Beach, Calif.
Powell Co., Wm., The, Cincinnati, O.
Pratt Co., Henry, Chicago, Ill.
RKL Controls, Inc., Hainesport, N. J.
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Saran Lined Pipe Co., Ferndale, Mich. (saran lined)
Security Valves Corp., So. Pasadena, Calif.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve & Fittings Co., Pittsburgh.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, DIAPHRAGM

(Diaphragm controller elements controls opening of valve)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Aqua Matic, Inc., Rockford, Ill.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
American-Standard Controls Div., Detroit, Mich.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Associated Valve Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Century Instrument Co., Detroit, Mich.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Dahl Co., Inc., G. W., Bristol, R. I.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Eclipse Fuel Engineering Co., Rockford, Ill.
Fabri-Valve Co. of America, Portland, Ore.
Farris Engineering Corp., Palisades Park, N. J.
Farris Flexible Valve Corp., Palisades Park, N. J.
Fischer & Porter Co., Warminster, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General-American Valve Co., Corona Del Mar, Calif.
General Controls Co., Glendale, Calif.
General Kinetics Corp., Englewood, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hills-McCanna Co., Chicago, Ill.
Hubbell Corp., Mundelein, Ill.
Johnson Corp., Three Rivers, Mich.
Johnson Service Co., Milwaukee, Wis.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Major Controls, Corona, Calif.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Mueller Brass Co., Port Huron, Mich.
Mueller Co., Decatur, Ill.
North American Mfg. Co., Cleveland, O.
OPW-Jordan Corp., Cincinnati, O.
Parks-Cramer Co., Fitchburg, Mass. (plain and jacketed)
Patrol Valve Co., The, Cleveland, O.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Pratt Co., Henry, Chicago, Ill.
RKL Controls, Inc., Hainesport, N. J.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Saran Lined Pipe Co., Ferndale, Mich.
Sarco Co., Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Scientific Instrument Co., Detroit, Mich.
Security Valves Corp., So. Pasadena, Calif.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sullivan Valve & Engineering Co., Butte, Mont.
Trerice Co., H. O., Detroit, Mich.
Uniflow Valve Corp., Cranford, N. J.
United States Rubber Co., New York, N. Y.
Valves, Inc., F. G., Milwaukee, Wis.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, DIAPHRAGM

(Diaphragm itself throttles or shuts off flow)

Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Flow Control Corp., Houston, Tex.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Associated Valve Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Automatic Switch Co., Florham Park, N. J.
Automotive Rubber Co., Inc., Detroit, Mich.
Bailey Co., Chas. M., San Francisco, Calif.
Baso, Inc., Milwaukee, Wis.
Cash Co., A. W., Decatur, Ill.
Century Instrument Co., Detroit, Mich.
Chatleff Valve & Mfg. Co., Austin, Tex.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Corp., Philadelphia, Pa.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Dahl Co., Inc., G. W., Bristol, R. I.
Fischer & Porter Co., Warminster, Pa.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (chemical stoneware)
General Controls Co., Glendale, Calif.
Grinnell Co., Inc., Providence, R. I.

Grove Valve and Regulator Co., Oakland, Calif.
Henry Valve Co., Melrose Park, Ill.
Hills-McCanna Co., Chicago, Ill.
Hunt Valve Co., Div. of IBEC, Salem, O.
Imperial-Eastman Corp., Chicago, Ill.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Lead Lined Iron Pipe Co., Wakefield, Mass.
Major Controls, Corona, Calif.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Modern Engineering Co., St. Louis, Mo.
Norgren Co., C. A., Englewood, Colo.
Rockwell Co., W. S., Fairfield, Conn.
Sall Bros. Co., Rockford, Ill.
Saran Lined Pipe Co., Ferndale, Mich.
Scientific Instrument Co., Detroit, Mich.
Security Valves Corp., So. Pasadena, Calif.
Spence Engineering Co., Inc., Walden, N. Y.
Sullivan Valve & Engrg. Co., Butte, Mont.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Trerice Co., H. O., Detroit, Mich.
Tube Turns Plastics, Inc., Louisville, Ky. (injection molded UPVC)
Uniflow Valve Corp., Cranford, N. J.
United States Rubber Co., New York, N. Y.
Walworth Co., New York, N. Y. (plastic PVC diaphragm)
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.
White-Rodgers Co., St. Louis, Mo.

VALVES, DIAPHRAGM (Diaphragm used as seal between body and bonnet)

Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Aqua Matic, Inc., Rockford, Ill.
Arco Products, Automotive Rubber Co., Detroit, Mich.
Associated Valve Co., North Wales, Pa.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Corp., Philadelphia, Pa.
Coppus Engineering Corp., Worcester, Mass.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
Duriron Co., Inc., The, Dayton, O.
Eclipse Fuel Engineering Co., Rockford, Ill.
General Controls Co., Glendale, Calif.
Goodrich Industrial Products Co., B. F., Akron, O. (rubber lined)
Grinnell Co., Inc., Providence, R. I.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Haveg Industries, Inc., Wilmington, Del.
Henry Valve Co., Melrose Park, Ill.
Hills-McCanna Co., Chicago, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Klipfel Valves, Inc., Hamilton, O.
Knight Co., Maurice A., Akron, O. (molded resin for acids)
Leslie Co., Lyndhurst, N. J.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Mueller Brass Co., Port Huron, Mich.
OPW-Jordan Corp., Cincinnati, O.
Powell Co., Wm., The, Cincinnati, O.
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Security Valves Corp., So. Pasadena, Calif.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Trane Co., The, La Crosse, Wis.
Uniflow Valve Corp., Cranford, N. J.
United States Rubber Co., New York, N. Y.
Watts Regulator Co., Lawrence, Mass.

VALVES, FIRE PROTECTION, SPRINKLER SYSTEM CONTROL

Allen Mfg. Co., W. D., Bellwood, Ill.
American District Telegraph Co., New York, N. Y.
Automatic Switch Co., Florham Park, N. J.
Coppus Engineering Corp., Worcester, Mass.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Davis Regulator Co., Chicago, Ill.
Everlasting Valve Co., Jersey City, N. J.
Fairbanks Co., The, New York, N. Y.
Fyr-Fyter Co., Dayton,O.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Grinnell Co., Inc., Providence, R. I.
Grove Valve and Regulator Co., Oakland, Calif.
Hersey-Sparling Meter Co., Dedham, Mass.
Hodgman Mfg. Co., Inc., Taunton, Mass.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jenkins Bros., New York, N. Y.
Keckley Co., O. C., Skokie, Ill.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
Mueller Co., Decatur, Ill.
Okadee Co., Chicago, Ill.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Raisler Corp., Grimes Sprinkler Div., New York, N. Y.
Rockwood Sprinkler Co., Worcester, Mass.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Security Valves Corp., So. Pasadena, Calif.
Stockham Valves & Fittings, Birmingham, Ala.
Valco, Inc., Cincinnati, O.
Zurn Industries, Inc., Erie, Pa.

VALVES, FLOAT

Alco Valve Co., St. Louis, Mo.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Hard rubber)
American Moistening Co., Cleveland, N. C.
Associated Valve Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Boylston Steam Specialty Co., Chicago, Ill.
Cla-Val Co., Newport Beach, Calif.
Cleveland Humidifier Co., Cleveland, O.
Cochrane Corp., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis. (oil)
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Duriron Co., Inc., The, Dayton, O. (corrosion resisting)
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Frick Co., Waynesboro, Pa.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Grove Valve and Regulator Co., Oakland, Calif.
Hubbell Corp., Mundelein, Ill.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Instruments, Inc., Tulsa, Okla.
Keckley Co., O. C., Skokie, Ill.
Ken-Ray Brass Products, Inc., Vermont, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Luzerne Rubber Co., Trenton, N. J. (Hard rubber)
Maid-O'-Mist, Inc., Chicago, Ill.
McAlear Mfg. Co., Chicago, Ill.
McDonald Mfg. Co., A.Y., Dubuque, Ia.
McDonnell & Miller, Inc., Chicago, Ill.
Miller Mfg. Co., St. Paul, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Morey, Dan, Los Angeles, Calif. (for evaporative coolers and cooling towers)
Multiplex Mfg. Co., Berwick, Pa.
Phillips & Co., H. A., Chicago, Ill.
Robert Mfg. Co., Los Angeles, Calif.
Rockwell Co., W. S., Fairfield, Conn.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schaub Engineering Co., Fred H., Downers Grove, Ill.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scovill Mfg. Co., Waterbury, Conn.
Skuttle Mfg. Co., Milford, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Stickle Steam Specialties Co., Indianapolis.
Taco Heaters, Inc., Cranston, R. I.
TOT Towers Co., Houston, Tex.
Trerice Co., H. O., Detroit, Mich.
Tryco Products, Inc., Westfield, Mass.
Valves, Inc., F. G., Milwaukee, Wis.
Vanton Pump & Engineering Corp., Hillside, N. J. (plastic)
Wabash Corp., Chicago, Ill.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, FLOAT AND LEVER BALANCED

Atlas Valve Co., Newark, N. J.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
McAlear Mfg. Co., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.

VALVES, FLOW CONTROL, FOR HOT WATER HEATING SYSTEMS

American Flow Control Corp., Houston, Tex.
American Tube & Controls, Inc., West Warwick, R. I.
Automatic Switch Co., Florham Park, N. J.
Barber-Colman Co., Rockford, Ill.
Beacon Brass Co., Waltham, Mass.
Bell & Gossett Co., Morton Grove, Ill.
Clark-Cooper Co., Inc., CC Pump Div., Palmyra, N. J.
Conoflow Corp., Subsid. of Walworth Co., Philadelphia, Pa.
DeZurik Corp., Sartell, Minn.
Dunham-Bush, Inc., West Hartford, Conn.
Econo Products Company, Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Edgewood Mfg. Co., El Monte, Calif.
Fischer & Porter Co., Warminster, Pa.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hayes Mfg. Co., Erie, Pa.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jackes-Evans Mfg. Co., Controls Div., St. Louis, Mo.
Kates Co., W. A., Deerfield, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Metalmaster Corp., Newark, N. J.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Penn Controls, Inc., Goshen, Ind.
Powell Co., The Wm., Cincinnati, O.
Quality Specialty Co., Inc., Camden, N. J.
Rockwell Co., W. S., Fairfield, Conn.
Sall Bros. Co., Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, La Crosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Valve Controls Co., North Hollywood, Calif.
Velan Valve Corp., Plattsburgh, N. Y.
Watts Regulator Co., Lawrence, Mass.
White-Rodgers Co., St. Louis, Mo.

VALVES, FLUSH, BOTTOM TANK

Cooper Alloy Corp., Hillside, N. J.
Ladish Co., Cudahy, Wis.
Luzerne Rubber Co., Trenton, N. J. (hard rubber)
Powell Co., Wm., The, Cincinnati, O.

VALVES, FORGED STEEL

Alco Products, Inc., Schenectady, N. Y.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Atlas Valve Co., Newark, N. J.
Cameron Iron Works, Inc., Houston, Tex.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Edward Valves, Inc., East Chicago, Ind.
Farris Engineering Corp., Palisades Park, N. J.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Kinetics Corp., Englewood, N. J.
Grove Valve and Regulator Co., Oakland, Calif.
Henry Valve Co., Melrose Park, Ill.
Hunt Valve Co., Div. of IBEC, Salem, O.
Kerotest Mfg. Corp., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Lenz Co., Dayton, O.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Ohio Injector Co., Wadsworth, O.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve & Fittings Co., Pittsburgh.
Taylor Instrument Companies, Rochester, N. Y.
Velan Valve Corp., Plattsburgh, N. Y.
Vogt Machine Co., Henry, Louisville, Ky.
Worcester Valve Co., Inc., Worcester, Mass.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES, FUEL OIL, METERING

American-Standard Controls Div., Detroit, Mich.
Automatic Switch Co., Florham Park, N. J.
Hauck Mfg. Co., Brooklyn, N. Y.
Henry Valve Co., Melrose Park, Ill.
National Airoil Burner Co., Inc., Philadelphia, Pa.

VALVES, GATE, ALLOY

Alloy Steel Products Co., Linden, N. J. (Stainless steel)
Cameron Iron Works, Inc., Houston, Tex.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
Dia-Plug Valve Corp., Buffalo, N. Y.
Edward Valves, Inc., East Chicago, Ind.
Fabri-Valve Co. of America, Portland, Ore.
Fischer & Porter Co., Warminster, Pa.
Hamer Valves Inc., Long Beach, Calif.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Corp., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Milwaukee Valve Co., Milwaukee, Wis.
New England Valve Corp., Worcester, Mass.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
OPW-Jordan Corp., Cincinnati, O.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.
Stockham Valves & Fittings, Birmingham, Ala.
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York, N. Y.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, GATE, ALUMINUM

Allegheny Valve Co., Warren, Pa.
American Flow Control Corp., Houston, Tex.
Darling Valve & Mfg. Co., Williamsport, Pa.
Hamer Valves Inc., Long Beach, Calif.
Milwaukee Valve Co., Milwaukee, Wis.
OPW-Jordan Corp., Cincinnati, O.
Powell Co., Wm., The, Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, GATE, BRASS AND BRONZE

American-Standard Controls Div., Detroit, Mich.
Anaconda American Brass Co., Waterbury, Conn.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Crane Co., Chicago, Ill.
Darling Valve Mfg. Co., Williamsport, Pa.
Eclipse Fuel Engineering Co., Rockford, Ill.
Everlasting Valve Co., Jersey City, N. J.
Fairbanks Co., The, New York, N. Y.
Fischer & Porter Co., Warminster, Pa.
Hamer Valves Inc., Long Beach, Calif.
Hammond Valve Corp., Hammond, Ind.
Jenkins Bros., New York, N. Y.
Jerome Hydraulics Co., Inc., Mineola, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Lead Lined Iron Pipe Co., Wakefield, Mass. (Tin lined)
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Marsh Valve Co., Dunkirk, N. Y.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milwaukee Valve Co., Milwaukee, Wis.
Morrison Brothers Co., Dubuque, Ia. (for oil handling)
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
OPW-Jordan Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Pittsburgh Valve Co., Reedsville, W. Va.
Powell Co., Wm., The, Cincinnati, O.
Prier Brass Mfg. Co., Kansas City, Mo.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Rockford Brass Works, Rockford, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Schaible Co., The, Mariemont, O.
Scott Valve Mfg. Co., Detroit, Mich.
Stockham Valves & Fittings, Birmingham, Ala.
Walworth Co., New York, N. Y.

VALVES, GATE, IRON BODY

Chapman Valve Mfg. Co., The, Springfield, Mass.
Clow & Sons, Inc., James B., Chicago, Ill.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
De Zurik Corp., Sartell, Minn.
Eclipse Fuel Engineering Co., Rockford, Ill.
Eddy Valve Co., Waterford, N. Y.
Everlasting Valve Co., Jersey City, N. J.
Fairbanks Co., The, New York, N. Y.
Fischer & Porter Co., Warminster, Pa.
Gas Machinery Co., Cleveland, O.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Lead Lined Iron Pipe Co., Wakefield, Mass. (Lead and tin lined)
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mueller Co., Decatur, Ill.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
Queen City Valves Inc., Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Rich Mfg. Co. of California, Los Angeles.
Rockwell Co., W. S., Fairfield, Conn.
Scott Valve Mfg. Co., Detroit, Mich.
Stockham Valves & Fittings, Birmingham, Ala.
Walworth Co., New York, N. Y.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, GATE, MALLEABLE IRON

Crane Co., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.

VALVES, GATE, STEEL

Alco Products, Inc., Schenectady, N. Y.
Allegheny Valve Co., Warren, Pa.
Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Cameron Iron Works, Inc., Houston, Tex.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
De Zurik Corp., Sartell, Minn.
Edward Valves, Inc., East Chicago, Ind.
Everlasting Valve Co., Jersey City, N. J.
Fabri-Valve Co. of America, Portland, Ore.
Fischer & Porter Co., Warminster, Pa.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Grove Valve and Regulator Co., Oakland, Calif.
Hamer Valves, Inc., Long Beach, Calif.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lead Lined Iron Pipe Co., Wakefield, Mass. (lead lined)
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
New England Valve Corp., Worcester, Mass.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Pacific Valves, Inc., Long Beach, Calif.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Roberts Co., C. A., Franklin Park, Ill. (stainless)
Rockwell Co., W. S., Fairfield, Conn.
Stockham Valves & Fittings, Birmingham, Ala.
Velan Valve Corp., Plattsburgh, N. Y.
Vogt Machine Co., Henry, Louisville, Ky.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Walworth Co., New York, N. Y.
Worcester Valve Co., Inc., Worcester, Mass.
Yuba Div., Yuba Consolidated Industries, Inc., Benicia, Calif.

VALVES, GLOBE, ALLOY

Alloy Steel Products Co., Linden, N. J. (Stainless steel)
Associated Valve, North Wales, Pa.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Edward Valves, Inc., East Chicago, Ind.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Greer Hydraulics, Inc., Los Angeles, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Milwaukee Valve Co., Milwaukee, Wis.
New England Valve Corp., Worcester, Mass
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
Republic Mfg. Co., Cleveland, O.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Stockham Valves & Fittings, Birmingham.
Strahman Valves, Inc., Florham Park, N. J.
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York, N. Y.

VALVES, GLOBE, ALUMINUM

Dahl Co., Inc., G. W., Bristol, R. I.
Powell Co., Wm., The, Cincinnati, O.
Republic Mfg. Co., Cleveland, O.

VALVES, GLOBE, BRASS AND BRONZE

American-Standard Controls Div., Detroit, Mich.

Anaconda American Brass Co., Waterbury, Conn.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
California Brass Mfg. Co., Los Angeles.
Carpenter Sales Corp., Cleveland, O.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Cla-Val Co., Newport Beach, Calif.
Cleveland Brass Mfg. Co., The, Kinsman, O.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Fairbanks Co., The, New York, N. Y.
Fine Products Co., Berwyn, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Greer Hydraulics, Inc., Los Angeles, Calif.
Grinnell Co., Inc., Providence, R. I.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hammond Valve Corp., Hammond, Ind.
Henry Valve Co., Melrose Park, Ill.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milwaukee Valve Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Morse-Smith-Morse, Inc., Watertown, Mass.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Pittsburgh Valve Co., Reedsville, W. Va.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Rockford Brass Works, Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Schaible Co., The, Mariemont, O.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Stockham Valves & Fittings, Birmingham, Ala.
Strahman Valves, Inc., Florham Park, N. J.
Superior Valve & Fittings Co., Pittsburgh.
Taylor Instrument Companies, Rochester, N. Y.
Walworth Co., New York, N. Y.
White Flomatic Div., Flomatic Corp., Hoosick Falls, N. Y.

VALVES, GLOBE, IRON BODY

Automatic Timing & Controls, Inc., King of Prussia, Pa.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Cla-Val Co., Newport Beach, Calif.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Dersch, Gesswein & Neuert, Inc., Chicago.
Fairbanks Co., The, New York, N. Y.
Fine Products Co., Berwyn, Ill.
Frick Co., Waynesboro, Pa.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Henry Valve Co., Melrose Park, Ill.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Lunkenheimer Co., Cincinnati, O.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Shank Co., Cyrus, Chicago, Ill.
Stockham Valves & Fittings, Birmingham, Ala.
Strahman Valves, Inc., Florham Park, N. J.
Taylor Instrument Companies, Rochester, N. Y.
Walworth Co., New York, N. Y.

VALVES, GLOBE, MALLEABLE IRON

Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Powell Co., Wm., The, Cincinnati, O.

VALVES, GLOBE, STEEL

Allmetal Screw Products Co., Inc., Garden City, Long Island, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Edward Valves, Inc., East Chicago, Ind.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General-American Valve Co., Corona Del Mar, Calif.
Grove Valve and Regulator Co., Oakland, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Henry Valve Co., Melrose Park, Ill.
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
New England Valve Corp., Worcester, Mass.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Pacific Valves, Inc., Long Beach, Calif.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Security Valves Corp., So. Pasadena, Calif.
Shank Co., Cyrus, Chicago, Ill.
Stockham Valves & Fittings, Birmingham, Ala.
Strahman Valves, Inc., Florham Park, N. J.
Superior Valve & Fittings Co., Pittsburgh.
Taylor Instrument Companies, Rochester, N. Y.
Velan Valve Corp., Plattsburgh, N. Y.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.

VALVES, INSTRUMENT

Airaterra (Roylyn Products), Glendale, Calif.
Associated Valve Co., North Wales, Pa.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Atlas Valve Co., Newark, N. J.
Autoclave Engineers Sales Corp., Erie, Pa.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Charles M., San Francisco, Calif.
Bristol Co., The, Waterbury, Conn.
Century Instrument Co., Detroit, Mich.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Circle Seal Products Co., Inc., Pasadena, Calif.
Continental Mfg. Co., Cincinnati, O.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Defender Instrument & Regulator Co., Boody, Ill
Edward Valves, Inc., East Chicago, Ind.
Fischer & Porter Co., Warminster, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General-American Valve Co., Corona Del Mar, Calif.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Kinetics Corp., Englewood, N. J.
Greer Hydraulics, Inc., Los Angeles, Calif.
Henry Valve Co., Melrose Park, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Keckley Co., O. C., Skokie, Ill.
Leslie Co., Lyndhurst, N. J.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Nuclear Products Co., Cleveland, O.
Ohio Injector Co., Wadsworth, O.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Petrometer Corp., Long Island City, N. Y.
Powell Co., Wm., The, Cincinnati, O.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Republic Mfg. Co., Cleveland, O.
Security Valves Corp., So. Pasadena, Calif.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Trerice Co., H. O., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.
Warren Engineering Co., Broadway, N. J.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES, LINED

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Flow Control Corp., Houston, Tex.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J. (Rubber lined)
Automatic Switch Co., Florham Park, N. J.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Cla-Val Co., Newport Beach, Calif.
Crane Co., Chicago, Ill.
Darling Valve & Mfg. Co., Williamsport, Pa.
De Zurik Corp., Sartell, Minn.
Division Lead Co., Summit, Ill.
Edward Valves, Inc., East Chicago, Ind.
Fabri-Valve Co. of America, Portland, Ore.
Farris Flexible Valve Corp., Palisades Park, N. J.
Gates Engineering Co., Wilmington, Del.
General Controls Co., Glendale, Calif., and Skokie, Ill
General Kinetics Corp., Englewood, N. J.
Goodrich Industrial Products Co., B. F., Akron, O
Grinnell Co., Inc., Providence, R. I.
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Knapp Mills, Inc., Long Island City, N. Y.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J. (rubber)
Lead Lined Iron Pipe Co., Wakefield, Mass. (Lead and tin lined)
National Lead Co., New York, N. Y. (Lead)
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O. (plastic)
RKL Controls, Inc., Hainesport, N. J.
Raybestos-Manhattan, Inc., Passaic, N. J. (Rubber)
Resisto Pipe & Valve Co., East Cambridge, Mass. (Lead)
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Saran Lined Pipe Co., Ferndale, Mich. (Saran lined)
United States Rubber Co., New York, N. Y. (rubber lined, metal)

VALVES, MIXING, HOT AND COLD WATER

American-Standard Controls Div., Detroit, Mich.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Barber-Colman Co., Rockford, Ill.
Beacon Brass Co., Waltham, Mass.
Bell & Gossett Co., Morton Grove, Ill.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Dole Valve Co., The, Morton Grove, Ill.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
General Fittings Co., East Greenwich, R. I.
Hammel-Dahl Div., General Controls Co.,

Warwick, R. I.
Holby Tempering Valve Co., Inc., New York, N. Y.
Hydrovac Valve Co., Medford, Mass.
Johnson Service Co., Milwaukee, Wis.
Klipfel Valves, Inc., Hamilton, O.
Leonard Valve Co., Cranston, R. I.
Marsh Valve Co., Dunkirk, N. Y.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Powers Regulator Co., Skokie, Ill.
Raymanco Mfg. Co., Owatonna, Minn.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schutte & Koerting Co., Buck County, Pa.
Scovill Mfg. Co., Waterbury, Conn.
Strahman Valves, Inc., Florham Park, N. J.
Taco Heaters, Inc., Cranston, R. I.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Vapor Heating Corp., Chicago, Ill.
Watts Regulator Co., Lawrence, Mass.
Wilson Engineering Corp., Chicago, Ill. (for controlling water temperature leaving process equipment)
Yula Corp., Bronx, N. Y.

VALVES, MIXING, HOT AND COLD WATER, THERMOSTATIC

American-Standard Controls Div., Detroit, Mich.
Atlas Valve Co., Newark, N. J.
Beacon Brass Co., Waltham, Mass.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Controls Co. of America, Soreng Div., Schiller Park, Ill.
Dole Valve Co., Morton Grove, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Fittings Co., East Greenwich, R. I.
Holby Tempering Valve Co., Inc., New York.
Klipfel Valves, Inc., Hamilton, O.
Lawler Automatic Controls, Inc., Mt. Vernon, N. Y.
Leonard Valve Co., Cranston, R. I.
OPW-Jordan Corp., Cincinnati, O.
Patrol Valve Co., The, Cleveland, O.
Powers Regulator Co., Skokie, Ill.
Raypak Co., Inc., El Monte, Calif.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schutte & Koerting Co., Buck County, Pa.
Scovill Mfg. Co., Waterbury, Conn.
Symmons Mfg. Co., Boston, Mass.
Taco Heaters, Inc., Cranston, R. I.
Trerice Co., H. O., Detroit, Mich.
Vic Mfg. Co., Minneapolis, Minn.
Warren Engineering Co., Broadway, N. J.
Watts Regulator Co., Lawrence, Mass.
White-Rodgers Co., St. Louis, Mo.
Yula Corp., Bronx, N. Y.

VALVES, MIXING, STEAM AND WATER

Barber-Colman Co., Rockford, Ill.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Johnson Service Co., Milwaukee, Wis.
Klipfel Valves, Inc., Hamilton, O.
Leonard Valve Co., Cranston, R. I.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
O'Brien Steam Specialty Co., Inc., Syracuse, N. Y.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls Inc., New York, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Strahman Valves, Inc., Florham Park, N. J.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Valve Controls Co., North Hollywood, Calif.
Vapor Heating Corp., Chicago, Ill.

VALVES, MOTOR OPERATED

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Alloy Steel Products Co., Linden, N. J. (stainless steel)
Associated Valve Co., North Wales, Pa.
Au-Temp-Co Corp., New York, N. Y.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Barber-Colman Co., Rockford, Ill.
Beacon Brass Co., Waltham, Mass.
Belco Industrial Equipment Div., Bogue Electrical Mfg. Co., Paterson, N. J.
Bell & Gossett Co., Morton Grove, Ill.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bristol Co., The, Waterbury, Conn.
Cash Co., A. W., Decatur, Ill.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Clark-Cooper Co., Inc., CC Pump Div., Palmyra, N. J.
Clow & Sons, Inc., James B., Chicago, Ill.
Cochrane Corp., Philadelphia, Pa.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I. (air motor)
Darling Valve & Mfg. Co., Williamsport, Pa.
Davis Regulator Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
De Zurik Corp., Sartell, Minn.
Duriron Co., Inc., The, Dayton, O. (corrosion resisting)
Eclipse Fuel Engineering Co., Rockford, Ill.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Eddy Valve Co., Waterford, N. Y.
Edward Valves, Inc., East Chicago, Ind.
Edwards Engineering Corp., Pompton Plains, N. J.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Fabri-Valve Co. of America, Portland, Ore.
Fischer & Porter Co., Warminster, Pa.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Foxboro Co., Foxboro, Mass.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General-American Valve Co., Corona Del Mar, Calif.
General Controls Co., Glendale, Calif., and Skokie, Ill.
General Kinetics Corp., Englewood, N. J.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hauck Mfg. Co., Brooklyn, N. Y.
Heat-Timer Corp., New York, N. Y.
Hills-McCanna Co., Chicago, Ill.
Hoffman Specialty Mfg. Corp., Indianapolis.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Illinois Engineering Products, American Air Filter Co., Inc. Louisville, Ky.
Jamesbury Corp., Worcester, Mass.
Jenkins Bros., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Keckley Co., O. C., Skokie, Ill.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Kingston National Controls Div., Kingston Industries, Inc., Medfield, Mass.
Ludlow Valve Mfg. Co., Inc., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
New England Gear Wks., Inc., Southington, Conn.
North American Mfg. Co., Cleveland, O.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Penn Controls, Inc., Goshen, Ind.
Philadelphia Gear Corp., King of Prussia, Pa.
Powell Co., Wm., The, Cincinnati, O.
Pratt Co., Henry, Chicago, Ill.
Quality Specialty Corp., Inc., Camden, N. J.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Regent Engineering Co., Wood Dale, Ill.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Saran Lined Pipe Co., Ferndale, Mich.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte and Koerting Co., Buck County, Pa.
Scientific Instrument Co., Detroit, Mich.
Squires Co., C. E., The, Cleveland, O.
Stockham Valves & Fittings, Birmingham, Ala.
Taco Heaters, Inc., Cranston, R. I.
Taylor Instrument Companies, Rochester.
Thrush & Co., H. A., Peru, Ind.
Trerice Co., H. O., Detroit, Mich.
Velan Valve Corp., Plattsburgh, N. Y.
Vogt Machine Co., Henry, Louisville, Ky.
Walworth Co., New York, N. Y.
Warren Engineering Co., Broadway, N. J.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.
Yuba Div., Yuba Consolidated Industries, Inc. Benicia, Calif.

VALVES, NEEDLE

Allin Mfg. Co., Inc., Chicago, Ill.
Alloy Steel Products Co., Linden, N. J. (Stainless steel)
American Meter Co., Inc., Philadelphia, Pa.
American-Standard Controls Div., Detroit, Mich.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Associated Valve Co., North Wales, Pa.
Autoclave Engineers Sales Corp., Erie, Pa.
Automatic Switch Co., Florham Park, N. J.
Binks Mfg. Co., Chicago, Ill.
Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.
Carpenter Sales Corp., Cleveland, O
Chase Brass & Copper Co., Waterbury, Conn.
Chemtrol, Plastic Piping Systems Equipment, Santa Ana, Calif. (plastic)
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Commonwealth Brass Corp., Detroit. Mich.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis. (oil)
Cooper Alloy Corp., Hillside, N. J.
Couplings Co., Chicago, Ill.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Dragon Engineering Co., Norwalk, Conn.
Edward Valves, Inc., East Chicago, Ind.
Fairbanks Co., The, New York, N. Y.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General-American Valve Co., Corona Del Mar, Calif.
Greer Hydraulics, Inc., Los Angeles, Calif.
Grove Valve and Regulator Co., Oakland, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, Pa.
Hammond Valve Corp., Hammond, Ind.
Henry Valve Co., Melrose Park, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Jenkins Bros., New York, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Ladish Co., Cudahy, Wis.
Lunkenheimer Co., Cincinnati, O.
Maid-O'-Mist, Inc., Chicago, Ill.
Madden Brass Products Co., Aurora, Ill.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Milwaukee Valve Co., Milwaukee, Wis.
Modern Engineering Co., St. Louis, Mo.
Morrison Brothers Co., Dubuque, Ia. (for oil handling)
Mueller Brass Co., Port Huron, Mich.
Norgren Co., C. A., Englewood, Colo.
Nuclear Products Co., Cleveland, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.

Reliable Products Mfg. Co., Inc., Brooklyn, N. Y.
Republic Mfg. Co., Cleveland, O.
Research Vacuum Supply Co., Chicago, Ill.
Security Valves Corp., So. Pasadena, Calif.
Shank Co., Cyrus, Chicago, Ill.
Spindler & Sons, Inc., August, Jersey City, N. J.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Torit Mfg. Co., St. Paul, Minn.
Uehling Instrument Co., Paterson, N. J.
Vacuum-Electronic Engineering Co., New Hyde Park, L. I., N. Y.
Velan Valve Corp., Plattsburgh, N. Y.
Walworth Co., New York. N. Y.
Watkins Co., J. E., Maywood, Ill. (hand expansion)
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.

VALVES, NON-RETURN

Autoclave Engineers Sales Co., Erie, Pa.
Crane Co., Chicago, Ill.
Edward Valves, Inc., East Chicago, Ind.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jenkins Bros., New York, N. Y.
Kepner Products Co., Summit, Ill.
Lunkenheimer Co., Cincinnati, O.
Ohio Injector Co., Wadsworth, O.
Powell Co., Wm., The, Cincinnati, O.
Republic Mfg. Co., Cleveland, O.
Scott Valve Mfg. Co., Detroit, Mich.
Velan Valve Corp., Plattsburgh. N. Y.
Walworth Co., New York, N. Y.

VALVES, OXYGEN

Airaterra (Roylyn Products), Glendale, Calif.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cooper Alloy Corp., Hillside, N. J.
Dahl Co., Inc., G. W., Bristol, R. I.
Fairbanks Co., The, New York, N. Y.
Farris Engineering Corp., Palisades Park, N. J.
Greer Hydraulics, Inc., Los Angeles, Calif.
Grinnell Co., Inc., Providence, R. I.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hunt Valve Co., Div. of IBEC, Salem, O.
Jamesbury Corp., Worcester, Mass.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Lunkenheimer Co., Cincinnati, O.
Modern Engineering Co., St. Louis, Mo.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Oxygen Equipment & Service Co., Chicago, Ill.
Powell Co., Wm., The, Cincinnati, O.
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Schutte & Koerting Co., Buck County, Pa.
Security Valves Corp., So. Pasadena, Calif.
Shank Co., Cyrus, Chicago, Ill.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Valco, Inc., Cincinnati, O.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Walworth Co., New York, N. Y.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Worcester Valve Co., Inc., Worcester, Mass.

VALVES, PACKLESS

Associated Valve Co., North Wales, Pa.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Cash Co., A. W., Decatur, Ill.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General-American Valve Co., Corona Del Mar, Calif.
Grinnell Co., Inc., Providence, R. I.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hanna Engineering Wks., Chicago, Ill.
Henry Valve Co., Melrose Park, Ill.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Imperial-Eastman Corp., Chicago, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kinney Vacuum Div., The New York Air Brake Co., Boston, Mass. (vacuum)
Leslie Co., Lyndhurst, N. J.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
Mercoid Corp., The, Chicago, Ill.
OPW-Jordan Corp., Cincinnati, O.
Powell Co., Wm., The, Cincinnati, O.
Powers Regulator Co., Skokie, Ill.
Security Valves Corp., So. Pasadena, Calif.
Spence Engineering Co., Inc., Walden, N. Y.
Superior Valve & Fittings Co., Pittsburgh.

VALVES, PILOT OPERATED

Airmatic Valve, Inc., Cleveland, O.
Alco Valve Co., St. Louis, Mo.
American Flow Control Corp., Houston, Tex.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Atlas Valve Co., Newark, N. J.
Automatic Switch Co., Florham Park, N. J.
Bailey Co., Charles M., San Francisco, Calif.
Barksdale Valves, Los Angeles, Calif.
Bellows-Valvair, Div. of IBEC, Akron, O.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Carter Controls, Inc., Lansing, Ill.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Clark Mfg. Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
DeZurik Corp., Sartell, Minn.
Farris Flexible Valve Corp., Palisades Park, N. J.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hanna Engineering Works, Chicago, Ill.
Hannifin Co., A Div. of Parker-Hannifin Corp., Des Plaines, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hubbell Corp., Mundelein, Ill.
Hunt Valve Co., Div. of IBEC, Salem, O.
Illinois Water Treatment Co., Rockford, Ill.
Jamesbury Corp., Worcester, Mass.
Keckley Co., O. C., Skokie, Ill.
Kepner Products Co., Summit, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Mercoid Corp., The, Chicago, Ill.
OPW-Jordan Corp., Cincinnati, O.
Phillips & Co., H. A., Chicago, Ill.
Republic Mfg. Co., Cleveland, O.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte & Koerting Co., Buck County. Pa.
Security Valves Corp., So. Pasadena, Calif.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Stickle Steam Specialties Co., Indianapolis.
Trerice Co., H. O., Detroit, Mich.
Valcor Engineering Corp., Kenilworth, N. J.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, PLASTIC

Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Flow Control Corp., Houston, Tex.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
American Vulcathene Div. Nalge Co., Inc., Rochester, N. Y. (polyethylene)
Argo Plastic Products, Cleveland, O.
Atlas Mineral Products Co., Mertztown, Pa.
Atlas Valve Co., Newark, N. J.
Chemtrol, Plastic Piping Systems Equipment, Santa Ana, Calif.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (Diaphragm Valves)
Conley Plastic Corp., Ed, Tulsa, Okla.
Crescent Plastics, Inc., Evansville, Ind. (PVC)
Dahl Co., Inc., G. W., Bristol, R. I.
Dorak Products Corp., New York, N. Y.
Dow Chemical Co., The, Midland, Mich. (saran-lined)
General-American Valve Co., Corona Del Mar, Calif.
Goodrich Industrial Products Co., B. F., Akron, O. (rigid)
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O.
Grinnell Co., Inc., Providence, R. I.
Haveg Industries, Inc., Wilmington, Del.
Hills-McCanna Co., Chicago, Ill.
Illinois Water Treatment Co., Rockford, Ill.
Industrial Plastic Fabricators, Inc., Norwood, Mass. (PVC)
Jamesbury Corp., Worcester, Mass.
Kraloy Plastic Pipe Co., Inc., Los Angeles, Calif.
LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Lunkenheimer Co., Cincinnati, O. (PVC)
Luzerne Rubber Co., Trenton, N. J.
Mannesmann-Easton Plastic Products Co., Inc., Easton, Pa. (rigid, unplasticized polyvinyl chloride)
Nuclear Products Co., Cleveland, O.
Plastiline, Inc., Pompano Beach, Fla.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Santa Ana Plastics Div., Rexall Drug & Chemical Corp., Santa Ana, Calif. (PVC)
Saran Lined Pipe Co., Ferndale, Mich, (saran)
Seelye Craftsmen, Inc., Minneapolis, Minn.
Sloane Mfg. Co., Sun Valley, Calif.
Stokes Molded Products, Div. of Electric Storage Battery Co., Trenton, N. J.
Tube Turns Plastics Inc., Louisville, Ky. (PVC)
United States Rubber Co., New York, N. Y.
Valcor Engineering Corp., Kenilworth, N. J.
Vanton Pump & Equipment Corp., Hillside, N. J.
Walworth Co., New York, N. Y.

VALVES, PLUG, LUBRICATED

American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Circle Seal Products Co., Inc., Pasadena, Calif.
Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O. (plastic)
Couplings Co., Chicago, Ill.
Crane Co., Chicago, Ill.
Duriron Co., Inc., The, Dayton, O. (corrosion resisting)
Electronics Corp. of America, Cambridge, Mass.
Fabri-Valve Co. of America, Portland, Ore.
Hamer Valves Inc., Long Beach, Calif.
Hays Mfg. Co., Erie, Pa.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Imperial-Eastman Corp., Chicago, Ill.
Mueller Co., Decatur, Ill.
Ohio Injector Co., Wadsworth, O.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Powell Co., William, Cincinnati, O.
Republic Mfg. Co., Cleveland, O.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Walworth Co., New York, N. Y.

VALVES, PLUG, NON-LUBRICATED

Alco Products, Inc., Schenectady, N. Y.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Alpha Plastics, Inc., Livingston, N. J. (PVC)
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Andale Co., Philadelphia, Pa.
Barrett Haentjens & Co., Hazleton, Pa.
Bordo Co., Inc., L. J., Glenside, Pa.
California Brass Mfg. Co., Los Angeles, Calif.
Cameron Iron Works, Inc., Houston, Tex.
Cooper Alloy Corp., Hillside, N. J.
Continental Mfg. Co., Cincinnati, O.
De Zurik Corp., Sartell, Minn. (eccentric plug)
Duriron Co., Inc., Dayton, O. (corrosion resisting)
Gato Valve Co., Pittsburgh, Pa.
Gilbert Brass Foundry Co., St. Louis, Mo.
Hays Mfg. Co., Erie, Pa.
Hetherington & Berner, Inc., Indianapolis, Ind. (jacketed)
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jenkins Bros., New York, N. Y.
Lunkenheimer Co., Cincinnati, O.
Mueller Co., Decatur, Ill.
National Airoil Burner Co., Inc., Philadelphia, Pa.
Parks-Cramer Co., Fitchburg, Mass. (jacketed)
Pittsburgh Brass Mfg. Co., Pittsburgh, Pa.
Pittsburgh Valve Co., Reedsville, W. Va.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Republic Mfg. Co., Cleveland, O.
Saran Lined Pipe Co., Ferndale, Mich. (Saran lined)
Stockham Valves & Fittings, Birmingham, Ala.
Taylor Instrument Companies, Rochester, N. Y.
Texsteam Corp., Houston, Tex.
Thermac Co., Corona, Calif.
Vogt Machine Co., Henry, Louisville, Ky.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVE POSITION INDICATORS

See Indicators, Valve, Position

VALVES, PRESSURE REDUCING AND PRESSURE RELIEF, WATER

(Including Provisions for Emergency Boiler Feeding)

Airmatic Valve, Inc., Cleveland, O.
American Flow Control Corp., Houston, Tex.
Barrett Haentjens & Co., Hazleton, Pa.
Bell & Gossett Co., Morton Grove, Ill.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Defender Instrument & Regulator Co., Boody, Ill.
Fischer & Porter Co., Warminster, Pa.
Foster Engineering Div., General Controls Co., Warwick, R. I.
General Controls Co., Glendale, Calif.
General Kinetics Corp., Englewood, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Instruments, Inc., Tulsa, Okla.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Milton Roy Co., Philadelphia, Pa.
Mueller Co., Decatur, Ill.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Sall Bros. Co., Rockford, Ill.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Security Valves Corp., So. Pasadena, Calif.
Squires Co., C. E., The, Cleveland, O.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Trerice Co., H. O., Detroit, Mich.
Valves, Inc., F. G., Milwaukee, Wis.
Watts Regulator Co., Lawrence, Mass.

VALVES, PRESSURE REDUCING AND REGULATING, AIR AND GAS

Airmatic Valve, Inc., Cleveland, O.
American Car & Foundry Div. of ACF Industries, Inc., New York.
American Flow Control Corp., Houston, Tex.
American Meter Co., Inc., Philadelphia, Pa.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Associated Valve Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Autoclave Engineers Sales Corp., Erie, Pa.
Bailey Co., Chas. M., San Francisco, Calif.
Barber-Colman Co., Rockford, Ill.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Century Instrument Co., Detroit, Mich.
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Clark Mfg. Co., Cleveland, O.
Cochrane Corp., Philadelphia, Pa.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Crane Co., Chicago, Ill.
Davis Regulator Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
DeVilbiss Co., The, Toledo, O.
Dockson Corp., Detroit, Mich.
Eclipse Fuel Engineering Co., Rockford, Ill.
Farris Flexible Valve Corp., Palisades Park, N. J.
Fischer & Porter Co., Warminster, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Gas & Oil Industry Laboratories, Inc., Irvington, N. J.
General Controls Co., Glendale, Calif., and Skokie, Ill.
General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.
General Kinetics Corp., Englewood, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Grove Valve and Regulator Co., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hanna Engineering Wks., Chicago, Ill.
Harris Calorific Co., The, Cleveland, O.
Hauck Mfg. Co., Brooklyn, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis.
Hubbell Corp., Mundelein, Ill.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Major Controls, Corona, Calif.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Maxitrol Co., Southfield, Mich.
McAlear Mfg. Co., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Modern Engineering Co., St. Louis, Mo.
Mueller Co., Decatur, Ill.
Norgren Co., C. A., Englewood, Colo.
OPW-Jordan Corp., Cincinnati, O.
Powers Regulator Co., Skokie, Ill.
Refrigerating Specialties Co., Chicago, Ill.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Research Vacuum Supply Co., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Instrument Co., Detroit, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., Cleveland, O.
Strong, Carlisle & Hammond, Conneaut, O.
Sullivan Valve & Engineering Co., Butte, Mont.
Taylor Instrument Companies, Rochester, N. Y.
Thrush & Co., H. A., Peru, Ind.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Tryco Products, Inc., Westfield, Mass.
Uehling Instrument Co., Paterson, N. J.
Universal Controls Corp., Dallas, Tex.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Western Sky Industries, Hayward, Calif.
Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, PRESSURE REDUCING AND REGULATING, HOT WATER

Airmatic Valve Inc., Cleveland, O.
American Tube & Controls, Inc., West Warwick, R. I.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Bell & Gossett Co., Morton Grove, Ill.
B-I-F Industries, Builders-Providence Div., Providence, R. I.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Century Instrument Co., Detroit, Mich.
Clark Mfg. Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Crane Co., Chicago, Ill.
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Dunham-Bush, Inc., West Hartford, Conn.
Fischer & Porter Co., Warminster, Pa.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hoffman Specialty Mfg. Corp., Indianapolis.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Mueller Co., Decatur, Ill.
OPW-Jordan Corp., Cincinnati, O.
Powers Regulator Co., Skokie, Ill.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Sall Bros. Co., Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Instrument Co., Detroit, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Stickle Steam Specialties Co., Indianapolis, Ind.
Strong, Carlisle & Hammond, Conneaut, O.
Taco Heaters, Inc., Cranston, R. I.

Taylor Instrument Companies, Rochester, N. Y.
Thrush & Co., H. A., Peru, Ind.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Valves, Inc., F. G., Milwaukee, Wis.
Vapor Heating Corp., Chicago, Ill.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.

VALVES, PRESSURE REDUCING AND REGULATING, LIQUID

Atlas Valve Co., Newark, N. J.
Bailey Co., Charles M., San Francisco, Calif.
Century Instrument Co., Detroit, Mich.
Clark Mfg. Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Eddington Metal Specialty Co., Eddington, Pa.
Edward Valves, Inc., East Chicago, Ind.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Grove Valve & Regulator Co., Oakland, Calif.
Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Mason-Neilan Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
OPW-Jordan Corp., Cincinnati, O.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Ross Valve & Mfg. Co., Inc., Troy, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Tryco Products, Inc., Westfield, Mass.
Warren Engineering Co., Broadway, N. J.
Watkins Co., J. E., Maywood, Ill.

VALVES, PRESSURE REDUCING AND REGULATING, STEAM

Aerco Corp., Northvale, N. J.
Airmatic Valve Inc., Cleveland, O.
Associated Valve Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Bailey Meter Co., Cleveland, O.
Boylston Steam Specialty Co., Chicago, Ill.
Bristol Co., The, Waterbury, Conn.
Brooke Engineering Co., Inc., Philadelphia, Pa.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Century Instrument Co., Detroit, Mich.
Clark Mfg. Co., Cleveland, O.
Cochrane Corp., Philadelphia, Pa.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa.
Crane Co., Chicago, Ill.
Davis Regulator Co., Chicago, Ill.
Defender Instrument and Regulator Co., Boody, Ill.
d'Este Div., Kaye & MacDonald, Inc., West Orange, N. J.
Dunham-Bush, Inc., West Hartford, Conn.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Kinetics Corp., Englewood, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Grove Valve and Regulator Co., Oakland, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hoffman Specialty Mfg. Corp., Indianapolis.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Leslie Co., Lyndhurst, N. J.
Locke Regulator Co., Salem, Mass.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
McAlear Mfg. Co., Chicago, Ill.
Mueller Co., Decatur, Ill.
OPW-Jordan Corp., Cincinnati, O.
Powers Regulator Co., Skokie, Ill.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., Chicago, Ill.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Scientific Instrument Co., Detroit, Mich.
Spence Engineering Co., Inc., Walden, N. Y.
Squires Co., C. E., The, Cleveland, O.
Staples & Pfeiffer, San Francisco, Calif.
Stickle Steam Specialties Co., Indianapolis, Ind.
Strong, Carlisle & Hammond, Conneaut, O.
Swiss Colony Engineering Div., Monroe, Wis.
Taylor Instrument Companies, Rochester, N. Y.
Trerice Co., H. O., Detroit, Mich.
Vapor Heating Corp., Chicago, Ill.
Warren Engineering Co., Broadway, N. J.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.

VALVES, PUMP

Anchor Packing Co., Philadelphia, Pa.
Atlas Valve Co., Newark, N. J.
Burrows Mfg. Co., F. A., York, Pa.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Coffin Turbo Pump, Hydrodynamics Div., Food Machinery & Chemical Corp., Englewood, N. J.
Combination Pump Valve Co., Philadelphia, Pa.
Darcoid Co., Inc., New York, N. Y.
Durabla Mfg. Co., New York, N. Y.
Farris Engineering Corp., Palisades Park, N. J.
Garlock, Inc., Palmyra, N. Y.
Goodrich Industrial Products Co., Akron, O.
Hill Pump Valve Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Ken Ray Brass Products, Inc., Vermont, Ill.
Ladish Co., Cudahy, Wis.
Ladish Co., Tri-Clover Div., Kenosha, Wis.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Madden Corp., The, Chicago, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Myers & Bro. Co., F. E., The, Ashland, O.
New York Belting & Packing Co., Passaic, N. J.
Sims Pump Valve Co., Hoboken, N. J.
United States Rubber Company, New York, N. Y.
Valves, Inc., F. G., Milwaukee, Wis.
Watts Regulator Co., Lawrence, Mass.
Webster Electric Co., Racine, Wis.
White Flomatic Div., Flomatic Corp., Hoosick Falls, N. Y.
Williams Gauge Co., Inc., The, Pittsburgh, Pa.

VALVES, QUICK OPENING

Alloy Steel Products Co., Linden, N. J. (Stainless steel)
American Flow Control Corp., Houston, Tex.
Anderson Brass Co., Detroit, Mich.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Barksdale Valves, Los Angeles, Calif.
Bellows-Valvair, Div. of IBEC, Akron, O.
Cameron Iron Works, Inc., Houston, Tex.
Chapman Valve Mfg. Co., The, Springfield, Mass.
Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Darling Valve Mfg. Co., Williamsport, Pa.
Defender Instrument & Regulator Co., Boody, Ill.
Dole Refrigerating Co., Chicago, Ill.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Fairbanks Co., The, New York, N. Y.
Farris Flexible Valve Corp., Palisades Park, N. J.
General Controls Co., Glendale, Calif. and Skokie, Ill.
General Kinetics Corp., Englewood, N. J.
Grinnell Co., Inc., Providence, R. I.
Hamer Valves Inc., Long Beach, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hammond Valve Corp., Hammond, Ind.
Hannifin Co., A Div. of Parker-Hannifin Corp., Des Plaines, Ill.
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Imperial-Eastman Corp., Chicago, Ill.
Jamesbury Corp., Worcester, Mass.
Jenkins Bros., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Ladish Co., Cudahy, Wis.
Leslie Co., Lyndhurst, N. J.
Lunkenheimer Co., Cincinnati, O.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milwaukee Valve Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Morrison Brothers Co., Dubuque, Ia. (for oil handling)
OPW-Jordan Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Ohio Injector Co., Wadsworth, O.
Okadee Co., Chicago, Ill.
Pacific Valves, Inc., Long Beach, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O.
RKL Controls, Inc., Hainesport, N. J.
Research Vacuum Supply Co., Chicago, Ill.
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Rockwood Sprinkler Co., Worcester, Mass.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarco Co., Inc., New York, N. Y.
Security Valves Corp., So. Pasadena, Calif.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Squires Co., C. E., The, Cleveland, O.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve & Fittings Co., Pittsburgh.
Taylor Instrument Companies, Rochester, N. Y.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Walworth Co., New York, N. Y.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.

VALVES, RADIATOR, AIR, FOR HOT WATER RADIATORS

American-Standard Controls Div., Detroit, Mich.
Anderson Products, Inc., Newtonville, Mass.
Beacon Brass Co., Waltham, Mass.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Beaton & Corbin Mfg. Co., Southington, Conn.
Dole Valve Co., The, Morton Grove, Ill.
G & H Mfg. Co., Philadelphia, Pa.
Hammond Valve Corp., Hammond, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Jenkins Bros., New York, N. Y.
Keeney Mfg. Co., Newington, Conn.
Little Brass Goods Co., M. S., Hartford, Conn.
Maid-O'Mist, Inc., Chicago, Ill.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
New York Air Valve Corp., Brooklyn, N. Y.
Powell Co., Wm., The, Cincinnati, O.
Quality Specialty Co., Inc., Camden, N. J.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.

Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Velan Valve Corp., Plattsburgh, N. Y.

VALVES, RADIATOR, AIR, FOR STEAM RADIATORS

American-Standard Controls Div., Detroit, Mich.
Anderson Products, Inc., Newtonville, Mass.
Beacon Brass Co., Waltham, Mass.
Bridgeport Brass Co., Bridgeport, Conn.
Dole Valve Co., The, Morton Grove, Ill.
Gorton Heating Co., Cranford, N. J.
Hammond Valve Corp., Hammond, Ind.
Heat-Timer Corp., New York, N. Y.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Jenkin Bros., New York, N. Y.
Keeney Mfg. Co., Newington, Conn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
New York Air Valve Corp., Brooklyn, N. Y.
Powell Co., Wm., The, Cincinnati, O.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Taco Heaters, Inc., Cranston, R. I.
Velan Valve Corp., Plattsburgh, N. Y.

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL, ELECTRIC

Barber-Colman Co., Rockford, Ill.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Jenkins Bros., New York, N. Y.
Kingston National Controls Div., Kingston Industries, Inc., Medfield, Mass.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls Inc., New York, N. Y.
Vapor Heating Corp., Chicago, Ill.

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL, PACKLESS

Barber-Colman Co., Rockford, Ill.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL, PNEUMATIC

Johnson Service Co., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL, SELF-CONTAINED

American-Standard Controls Div., Detroit, Mich.
Barber-Colman Co., Rockford, Ill.
Econo Products Co., Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
General Controls Co., Glendale, Calif.
Heat Timer Corp., New York, N. Y.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
OPW-Jordan Corp., Cincinnati, O.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Trane Co., The, LaCrosse, Wis.
Velan Valve Corp., Plattsburgh, N. Y.

VALVES, RADIATOR, AUTOMATIC TEMPERATURE CONTROL, SELF-CONTAINED, PACKLESS

Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Powers Regulator Co., Skokie, Ill.
Sarco Co., Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.

VALVES, RADIATOR, ORIFICE

Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Dunham-Bush, Inc., West Hartford, Conn.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jenkins Bros., New York, N. Y.
Marsh Valve Co., Dunkirk, N. Y.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Trane Co., The, LaCrosse, Wis.

VALVES, RADIATOR, STEAM AND HOT WATER, HAND

American-Standard Controls Div., Detroit, Mich.
Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Chase Brass & Copper Co., Waterbury, Conn.
Crane Co., Chicago, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Fairbanks Co., The, New York, N. Y.
Hammond Valve Corp., Hammond, Ind.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Illinois Engineering Products, American Air Filter Co., Inc., Louisville, Ky.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
Milwaukee Valve Co., Milwaukee, Wis.
Modine Mfg. Co., Racine, Wis.
Ohio Brass Co., Mansfield, O.
Powell Co., Wm., The, Cincinnati, O.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling, Inc., Milwaukee, Wis.
Trane Co., The, La Crosse, Wis.
Velan Valve Corp., Plattsburgh, N. Y.
Webster & Co., Warren, Camden, N. J.

VALVES, RADIATOR, STEAM AND HOT WATER, MODULATING

Barber-Colman Co., Rockford, Ill.
Barnes & Jones, Inc., Newtonville, Mass.
Cashin Co., W. D., Boston, Mass.
Dunham-Bush, Inc., West Hartford, Conn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Jenkins Bros., New York, N. Y.
Johnson Service Co., Milwaukee, Wis.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Marsh Valve Co., Dunkirk, N. Y.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Ohio Brass Co., Mansfield, O.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Squires Co., C. E., The, Cleveland, O.
Sterling Inc., Milwaukee, Wis.
Webster & Co., Warren, Camden, N. Y.

VALVES, REFRIGERATION (ANGLE, CHECK, GATE, GLOBE, NEEDLE, RELIEF)

Automatic Switch Co., Florham Park, N. J.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Crane Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Durabla Mfg. Co., New York, N. Y.
Frick Co., Waynesboro, Pa.
General-American Valve Co., Corona Del Mar, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Imperial-Eastman Corp., Chicago, Ill.
Jenkins Bros., New York, N. Y.
Kenmore Machine Products, Inc., Lyons, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Ladish Co., Cudahy, Wis.
Lunkenheimer Co., Cincinnati, O.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Metrex Valve Co., Franklin Park, Ill.
Mueller Brass Co., Port Huron, Mich.
Okadee Co., Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, BACK PRESSURE

Alco Valve Co., St. Louis, Mo.
American-Standard Controls Div., Detroit, Mich.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Bailey Co., Chas. M., San Francisco, Calif.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Circle Seal Products Co., Inc., Pasadena, Calif.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hubbell Corp., Mundelein, Ill.
Mueller Brass Co., Port Huron, Mich.
OPW-Jordan Corp., Cincinnati, O.
Refrigerating Specialties Co., Chicago, Ill.
Taylor Instrument Companies, Rochester, N. Y.
Temprite Products Corp., Birmingham, Mich.
York Div., Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, EXPANSION, CONSTANT PRESSURE

Alco Valve Co., St. Louis, Mo.
American-Standard Controls Div., Detroit, Mich.
Cash Co., A. W., Decatur, Ill.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Crane Co., Chicago, Ill.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Henry Valve Co., Melrose Park, Ill.
Hubbell Corp., Mundelein, Ill.
Longergan Co., J. E., Philadelphia, Pa.
Refrigerating Specialties Co., Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh, Pa.
York Div., Borg-Warner Corp., York, Pa.
Watkins Co., J. E., Maywood, Ill.

VALVES, REFRIGERATION, EXPANSION, THERMOSTATIC

Alco Valve Co., St. Louis, Mo.
American-Standard Controls Div., Detroit, Mich.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Metrex Valve Co., Franklin Park, Ill.
Sporlan Valve Co., St. Louis, Mo.
Tenney Engineering, Inc., Union, N. J.
X L Refrigerating Co., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, FLOAT, HIGH PRESSURE

Alco Valve Co., St. Louis, Mo.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.

Armstrong Machine Works, Three Rivers, Mich.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Frick Co., Waynesboro, Pa.
Hubbell Corp., Mundelein, Ill.
Mercoid Corp., Chicago, Ill.
Phillips & Co., H. A., Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Vilter Mfg. Co., Milwaukee, Wis.
Wabash Corp., Chicago, Ill.
York Div., Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, FLOAT, HIGH PRESSURE AND LOW PRESSURE

Alco Valve Co., St. Louis, Mo.
Phillips & Co., H. A., Chicago, Ill.
Superior Valve & Fittings, Co., Pittsburgh, Pa.
Vilter Mfg. Co., Milwaukee, Wis.
York Div., Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, LIQUID CONTROL, FLOAT PILOTED

Alco Valve Co., St. Louis, Mo.
Defender Instrument & Regulator Co., Boody, Ill.
Frick Co., Waynesboro, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Phillips & Co., H. A., Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh, Pa.
York Div., Borg-Warner Corp., York, Pa.

VALVES, REFRIGERATION, MAGNETIC STOP

Alco Valve Co., St. Louis, Mo.
American-Standard Controls Div., Detroit, Mich.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
General Controls Co., Glendale, Calif., and Skokie, Ill.
Hubbell Corp., Mundelein, Ill.
Jackes-Evans Mfg. Co., Controls Div., St. Louis, Mo.
Mercoid Corp., Chicago, Ill.
Penn Controls, Inc., Goshen, Ind.
Refrigerating Specialties Co., Chicago, Ill.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Sporlan Valve Co., St. Louis, Mo.
Watkins Co., J. E., Maywood, Ill.

VALVES, REFRIGERATION, TEMPERATURE REGULATING OR SNAP ACTION SUCTION

Alco Valve Co., St. Louis, Mo.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Hubbell Corp., Mundelein, Ill.
McCorkle Co., D. H., Berkeley, Calif.
Metrex Valve Co., Franklin Park. Ill.
OPW-Jordan Corp., Cincinnati, O.
Refrigerating Specialties Co., Chicago, Ill.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Temprite Products Corp., Birmingham, Mich.

VALVES, REFRIGERATION, WATER REGULATING, PRESSURE OR TEMPERATURE ACTUATED

Alco Valve Co., St. Louis, Mo.
Aminco Refrigeration Products, American Injector Co., Detroit, Mich.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Chatleff Valve & Mfg. Co., Austin, Tex.
Circle Seal Products Co., Inc., Pasadena, Calif.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Foster Engineering Div., General Controls Co., Warwick, R. I.
General Controls Co., Glendale, Calif.
Jordan Corp., Div. of OPW Corp., Cincinnati, O.
Kieley & Mueller, Inc., Middletown, N. Y.
Leslie Co., Lyndhurst, N. J.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
Mercoid Corp., Chicago, Ill.
Metrex Valve Co., Franklin Park, Ill.
Penn Controls, Inc., Goshen, Ind.
Powers Regulator Co., Skokie, Ill.
Refrigerating Specialties Co., Chicago, Ill.
Spence Engineering Co., Inc., Walden, N. Y.
York Div., Borg-Warner Corp., York, Pa.

VALVES, RELIEF, HOT WATER, COMBINED PRESSURE AND TEMPERATURE OPERATED

Beacon Brass Co., Waltham, Mass.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Crane Co., Chicago, Ill.
Dole Valve Co., The, Morton Grove, Ill.
Foster Engineering Div., General Controls Co., Warwick, R. I.
McDonnell & Miller, Inc., Chicago, Ill.
Mueller Co., Decatur, Ill.
New York Air Valve Corp., Brooklyn, N. Y.
Patrol Valve Co., The, Cleveland, O.
Sall Bros. Co., Rockford, Ill.
Schaible Co., The, Mariemont, O.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, La Crosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Watts Regulator Co., Lawrence, Mass.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

VALVES, RELIEF, HOT WATER, PRESSURE OPERATED

Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Beacon Brass Co., Waltham, Mass.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Bell & Gossett Co., Morton Grove, Ill.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Cochrane Corp., Philadelphia, Pa.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Davis Regulator Co., Chicago, Ill.
Dole Valve Co., The, Morton Grove, Ill.
Dunham-Bush, Inc., West Hartford, Conn.
Durabla Mfg. Co., New York, N. Y.
Edward Valves, Inc., East Chicago, Ind.
Farris Engineering Corp., Palisades Park, N. J.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hoffman Specialty Mfg. Corp., Indianapolis, Ind.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Kunkle Valve Co., Ft. Wayne, Ind.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
McAlear Mfg. Co., Chicago, Ill.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
McDonnell & Miller, Inc., Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Mueller Co., Decatur, Ill.
Multiplex Mfg. Co., Berwick, Pa.
OPW-Jordan Corp., Cincinnati, O.
Patrol Valve Co., The, Cleveland, O.
Sall Bros. Co., Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Taco Heaters, Inc., Cranston, R. I.
Texsteam Corp., Houston, Tex.
Thrush & Co., H. A., Peru, Ind.
Trane Co., The, La Crosse, Wis.
Trerice Co., H. O., Detroit, Mich.
Triplex Heating Specialty Co., Inc., Peru, Ind.
Tryco Products, Inc., Westfield, Mass.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

VALVES, RELIEF, HOT WATER, PRESSURE OPERATED, SELF-FILLING

Bailey Co., Chas. M., San Francisco, Calif.
Beaton & Cadwell Mfg. Co., New Britain, Conn.
Bell & Gossett Co., Morton Grove, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Crane Co., Chicago, Ill.
Klipfel Valves, Inc., Hamilton, O.
Mueller Co., Decatur, Ill.
Sall Bros. Co., Rockford, Ill.
Sarcotherm Controls, Inc., New York, N. Y.
Taco Heaters, Inc., Cranston, R. I.
Thrush & Co., H. A., Peru, Ind.
Trerice Co., H. O., Detroit, Mich.
Watts Regulator Co., Lawrence, Mass.
Webster & Co., Warren, Camden, N. J.

VALVES, RELIEF, HYDRAULIC

Associated Valve Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Charles M., San Francisco, Calif.
Blackhawk Mfg. Co., Milwaukee, Wis.
Cameron Iron Works, Inc., Houston, Tex.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Circle Seal Products Co., Inc., Pasadena. Calif.
Cla-Val Co., Newport Beach, Calif.
Commercial Shearing & Stamping Co., Youngstown, O.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Farris Engineering Corp., Palisades Park, N. J.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Greer Hydraulics, Inc., Jamaica, N. Y.
Hydronic Co., The, Detroit, Mich.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich.
Keckley Co., O. C., Skokie, Ill.
Kepner Products Co., Summit, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Klipfel Valves, Inc., Hamilton, O.
Kunkle Valve Co., Ft. Wayne, Ind.
Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
McDonnell & Miller, Inc., Chicago, Ill.
Milton Roy Co., Philadelphia, Pa.
Pantex Mfg. Corp., Hydraulic Div., Pawtucket, R. I.
Republic Mfg. Co., Inc., Cleveland, O.
Ross Valve Mfg. Co., Troy, N. Y.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Trane Co., The, La Crosse, Wis.
Tryco Products, Inc., Westfield, Mass.
Tuthill Pump Co., Chicago, Ill.
Webster Electric Co., Racine, Wis.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.
Wilson Co., K. R., Arcade, N. Y.

VALVES, RELIEF, OIL

American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Associated Valve Co., North Wales, Pa.
Atlas Valve Co., Newark, N. J.
Bailey Co., Chas. M., San Francisco, Calif.
Cash Co., A. W., Decatur, Ill.
Cash Valve Mfg. Corp., A. W., Decatur, Ill.
Circle Seal Products Co., Inc., Pasadena, Calif.
Cla-Val Co., Newport Beach, Calif.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Davis Regulator Corp., Chicago, Ill.
Durabla Mfg. Co., New York, N. Y.
Edward Valves, Inc., East Chicago, Ind.
Farris Engineering Corp., Palisades Park, N. J.
Fisher Governor Co., Marshalltown, Ia.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Grove Valve and Regulator Co., Oakland, Calif.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.

Hauck Mfg. Co., Brooklyn, N. Y.
Hubbell Corp., Mundelein, Ill.
Keckley Co., O. C., Skokie, Ill.
Kepner Products Co., Summit, Ill.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Klipfel Valves, Inc., Hamilton, O.
Kunkle Valve Co., Ft. Wayne, Ind.
Locke Regulator Co., Salem, Mass.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Milton Roy Co., Philadelphia, Pa.
Milwaukee Valve Co., Milwaukee, Wis.
Morrison Brothers Co., Dubuque, Ia. (for oil handling)
Mueller Co., Decatur, Ill.
Pantex Mfg. Corp., Hydraulics Div., Pawtucket, R. I.
Preferred Utilities Mfg. Corp., New York.
Reliable Products Mfg. Co., Inc., Brooklyn, N. Y.
Republic Mfg. Co., Cleveland, O.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
Schade Valve Mfg. Co., Philadelphia, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Staples & Pfeiffer, San Francisco, Calif.
Texsteam Corp., Houston, Tex.
Tuthill Pump Co., Chicago, Ill.
Watson & McDaniel Co., Philadelphia, Pa.
Watts Regulator Co., Lawrence, Mass.
Webster Electric Co., Racine, Wis.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, SADDLE

Anderson Metals Corp., Kansas City, Mo.
Beckett & Co., Inc., Thomas, Dallas, Tex.
Fairbanks Co., The, New York, N. Y.
Imperial-Eastman Corp., Chicago, Ill.
Madden Brass Products Co., Aurora, Ill.
Maid-O'Mist, Inc., Chicago, Ill.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Walworth Co., New York. N. Y.
Watsco, Inc., Hialeah, Fla.

VALVES, SAFETY CLEANOUT

Edward Valves, Inc., East Chicago, Ind.
Petrometer Corp., Long Island City, N. Y.

VALVES, SAFETY, STEAM

American Car & Foundry Div. of ACF Industries, Inc., New York. N. Y.
Associated Valve Co., North Wales, Pa.
Automatic Switch Co., Florham Park, N. J.
Beacon Brass Co., Waltham, Mass.
Crane Co., Chicago, Ill.
Crosby Valve & Gage Co., Wrentham, Mass.
Farris Engineering Corp., Palisades Park, N. J.
Foster Engineering Div., General Controls Co., Warwick, R. I.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Keckley Co., O. C., Skokie, Ill.
Kieley & Mueller, Inc., Middletown, N. Y.
Kunkle Valve Co., Ft. Wayne, Ind.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
New York Air Valve Corp., Brooklyn, N. Y.
Patrol Valve Co., The, Cleveland, O.
Powell Co., Wm., The, Cincinnati, O.
Rockwood Sprinkler Co., Worcester, Mass.
Texsteam Corp., Houston, Tex.
Trerice Co., H. O., Detroit, Mich.
Vapor Heating Corp., Chicago, Ill.

VALVES, SAMPLING

Alloy Steel Products Co., Linden, N. J. (stainless steel)
American-Standard Controls Div., Detroit, Mich.
Cooper Alloy Corp., Hillside, N. J.
Dahl Co., Inc., G. W., Bristol, R. I.
Duriron Co., Inc., The, Dayton, O.
Edward Valves, Inc., East Chicago, Ind.
Fabri-Valve Co. of America, Portland, Ore.
Greenwood Valve Div. of Vernon Tool Co., Ltd., Alhambra, Calif.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jamesbury Corp., Worcester, Mass.
OPW-Jordan Corp., Cincinnati, O.
Ohio Brass Co., Mansfield, O.
Powell Co., William, Cincinnati, O.
RKL Controls, Inc., Hainesport, N. J.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Valcor Engineering Corp., Kenilworth, N. J.
Walworth Co., New York, N Y
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.

VALVES, SLIDE

Chapman Valve Mfg. Co., The, Springfield, Mass.
Fabri-Valve Co. of America, Portland, Ore.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (chemical stoneware)
General Controls Co., Glendale, Calif.
Jenkins Bros., New York, N. Y.
OPW-Jordan Corp., Cincinnati, O.
Rockwell Co., W. S., Fairfield, Conn.
Walworth Co., New York, N. Y.
Webster Electric Co., Racine, Wis.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, SOLDER JOINT

Anaconda American Brass Co., Waterbury, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
Cleveland Brass Mfg. Co., The, Kinsman, O.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Darling Valve & Mfg. Co., Williamsport, Pa.
Fairbanks Co., The, New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Hammond Valve Corp., Hammond, Ind.
Henry Valve Co., Melrose Park, Ill.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Kerotest Mfg. Co., Pittsburgh, Pa.
Lunkenheimer Co., Cincinnati, O.
Marsh Valve Co., Dunkirk, N. Y.
Milwaukee Valve Co., Milwaukee, Wis.
Mueller Brass Co., Port Huron, Mich.
Nibco, Inc., Elkhart, Ind.
Ohio Brass Co., Mansfield, O.
Pittsburgh Valve Co., Reedsville, W. Va.
Powell Co., Wm., The, Cincinnati, O.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading, Pa.
Scott Valve Mfg. Co., Detroit, Mich.
Stockham Valves & Fittings, Birmingham, Ala.
Superior Valve and Fittings Co., Pittsburgh, Pa.
Valco, Inc., Cincinnati, O.
Walworth Co., New York, N. Y. (Silver brazed)

VALVES, SOLENOID

Airmatic Valve, Inc., Cleveland, O.
Alco Valves Co., St. Louis, Mo.
Allied Control Co., Inc., New York, N. Y.
American-Standard Controls Div., Detroit, Mich.
Associated Valve Co., North Wales, Pa.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Barksdale Valves, Los Angeles, Calif.
Baso, Inc., Milwaukee, Wis.
Cam-Stat, Inc., Div. of the Paul Henry Co., Los Angeles, Calif.
Chatleff Valve & Mfg. Co., Austin, Tex.
Clark Controller Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
Clayton Mark & Co., Evanston, Ill.
Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Davis Regulator Co., Chicago, Ill.
Dole Valve Co., The, Morton Grove, Ill.
Eclipse Fuel Engineering Co., Rockford, Ill.
Electronics Corp. of America, Cambridge, Mass.
Farris Flexible Valve Corp., Palisades Park, N. J.
General Controls Co., Glendale, Calif. and Skokie, Ill.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Gould Co., J. D., Indianapolis, Ind.
Grove Valve and Regulator Co., Oakland, Calif.
Hanna Engineering Wks., Chicago, Ill.
Hannifin Co., A Div. of Parker-Hannifin Corp., Des Plaines, Ill.
Hauck Mfg. Co., Brooklyn, N. Y.
Hays Mfg. Co., Erie, Pa.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hubbell Corp., Mundelein, Ill.
Hunt Valve Co., Div. of IBEC, Salem, O.
Jackes-Evans Mfg. Co., Controls Div., St. Louis, Mo.
Johnson Corp., The, Three Rivers, Mich.
Keckley Co., O. C., Skokie, Ill.
Lammert & Mann Co., Chicago, Ill. (Gas safety shut-off)
Ledeen Mfg. Co., El Monte, Calif.
Magnatrol Valve Corp., Hawthorne, N. J.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.
McDonnell & Miller, Inc., Chicago, Ill.
McQuay-Norris Mfg. Co., St. Louis, Mo.
Mercoid Corp., The, Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia
Nicholson & Co., W. H., Wilkes-Barre, Pa.
North American Mfg. Co., Cleveland, O.
Penn Controls, Inc., Goshen, Ind.
RKL Controls, Inc., Hainesport, N. J.
Ranco Incorporated, Columbus, O.
Refrigerating Specialties Co., Chicago, Ill.
Republic Mfg. Co., Cleveland, O.
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarco Co., Inc., New York, N. Y.
Sarcotherm Controls, Inc., New York, N. Y.
Scientific Instrument Co., Detroit, Mich.
Security Valves Corp., So. Pasadena, Calif.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Spence Engineering Co., Inc., Walden, N. Y.
Sporlan Valve Co., St. Louis, Mo.
Square D Co., Industrial Controller Div., Milwaukee, Wis.
Squires Co., C. E., The, Cleveland, O.
Stockham Valves & Fittings, Birmingham, Ala.
Trerice Co., H. O., Detroit, Mich.
Valcor Engineering Corp., Kenilworth, N. J.
Vapor Heating Corp., Chicago, Ill.
Watkins Co., J. E., Maywood, Ill.
Webster Electric Co., Racine, Wis.
White-Rodgers Co., St. Louis, Mo.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, STEAM-JACKETED

Alco Products, Inc., Schenectady, N. Y.
Alloy Steel Products Co., Linden, N. J. (Stainless steel)
Associated Valve Co., North Wales, Pa.
Darling Valve & Mfg. Co., Williamsport, Pa.
Devine Mfg. Co., Inc., J. P., Pittsburgh, Pa.
Everlasting Valve Co., Jersey City, N. J.
Gato Valve Co., Pittsburgh, Pa.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hetherington & Berner, Inc., Indianapolis, Ind
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Jamesbury Corp., Worcester, Mass.
Nuclear & Power Equipment Corp., S. San Francisco, Calif.
Parks-Cramer Co., Fitchburg, Mass.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Powell Co., Wm., The, Cincinnati, O.
Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.
Security Valves Corp., So. Pasadena, Calif.
Stockham Valves & Fittings, Birmingham, Ala.
Thermon Mfg. Co., Houston, Tex.
W-K-M, Div. of ACF Industries, Inc., Houston, Tex.
Walworth Co., New York, N. Y.
Wedgeplug Valve Co., Div. of Stockham Valves & Fittings, Birmingham, Ala.

VALVES, SWITCHING, HEAT PUMP

Alco Valve Co., St. Louis, Mo.
Chatleff Valve & Mfg. Co., Austin, Tex.
General Controls Co., Glendale, Calif.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Ranco Incorporated, Columbus, O.

VALVES, 2, 3 AND 4 WAY

Airmatic Valve, Inc., Cleveland, O.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Alco Valve Co., St. Louis, Mo.
American Car & Foundry Div. of ACF Industries, Inc., New York, N. Y.
Anderson Brass Co., Detroit, Mich.
Anderson Metals Corp., Kansas City, Mo.
Atkomatic Valve Co., Inc., Indianapolis, Ind.
Automatic Switch Co., Florham Park, N. J.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barber-Colman Co., Rockford, Ill.
Barksdale Valves, Los Angeles, Calif.
Barworth, Inc., Springfield, N. J.
Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Bordo Co., Inc., L. J., Glenside, Pa (plug)
Bristol Co., The, Waterbury, Conn.
Cash Co., A. W., Decatur, Ill.
Chatleff Valve & Mfg. Co., Austin, Tex
Chemtrol, Plastic Piping Systems Equipment, Santa Ana, Calif. (plastic)
Circle Seal Products Co., Inc., Pasadena, Calif.
Clark Controller Co., Cleveland, O.
Cla-Val Co., Newport Beach, Calif.
Commercial Shearing & Stamping Co., Youngstown, O.
Continental Mfg. Co., Cincinnati, O.
Cooper Alloy Corp., Hillside, N J.
Crane Co., Chicago, Ill.
Dahl Co., Inc., G. W., Bristol, R. I.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Davis Regulator Co., Chicago, Ill.
De Zurik Corp., Sartell, Minn.
Duriron Co., Inc., The, Dayton, O. (acid resisting)
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Gardner-Denver Co., Quincy, Ill
General Controls Co., Glendale, Calif., and Skokie, Ill.
Golden Anderson Valve Specialty Co., Pittsburgh, Pa.
Hammel-Dahl Div., General Controls Co., Warwick, R. I.
Hanna Engineering Wks., Chicago, Ill.
Hannifin Co., A Div. of Parker-Hannifin Corp., Des Plaines, Ill.
Henry Valve Co., Melrose Park, Ill.
Holby Tempering Valve Co., Inc., New York, N. Y.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hunt Valve Co., Div. of IBEC, Salem, O.
Imperial-Eastman Corp., Chicago, Ill.
Johnson Service Co., Milwaukee, Wis.
Kerotest Mfg. Co., Pittsburgh, Pa.
Kieley & Mueller, Inc., Middletown, N. Y.
Ladish Co., Cudahy, Wis.
Ledeen Mfg. Co., El Monte, Calif.
Lunkenheimer Co., Cincinnati, O.
Luzerne Rubber Co., Trenton, N. J. (Hard rubber)
Marsh Valve Co., Dunkirk, N. Y.
McDonald Mfg. Co., A. Y., Dubuque, Ia.
Mercoid Corp., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Mueller Brass Co., Port Huron, Mich
Nicholson & Co., W. H., Wilkes-Barre, Pa
Ohio Brass Co., Mansfield, O.
Owatonna Tool Co., Owatonna, Minn. (hydraulic)
Penn Controls, Inc., Goshen, Ind.
Permutit Co., Div. of Pfaudler Permutit, Inc., New York, N. Y.
Powell Co., Wm., Cincinnati, O.
Product Engineering, Oak Lawn, Ill.
Ranco Incorporated, Columbus, O.
Refrigerating Specialties Co., Chicago, Ill.
Republic Mfg. Co., Cleveland, O.
Rockwell Co., W. S., Fairfield, Conn.
Rockwell Mfg. Co., Meter and Valve Div., Pittsburgh, Pa.
Rockwood Sprinkler Co., Worcester, Mass.
Ruggles-Klingemann Mfg. Co., Boston, Mass.
Sarcotherm Controls, Inc., New York, N. Y.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Seamon Snap Valve Co., Westboro, Mass.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Sporlan Valve Co., St. Louis, Mo.
Superior Valve & Fittings Co., Pittsburgh, Pa.
Taylor Instrument Companies, Rochester, N. Y.
Valcor Engineering Corp., Kenilworth, N. J.
Valve Controls Co., North Hollywood, Calif.
Wach Co., E. H., The, Chicago, Ill.
Walworth Co., New York, N. Y. (Lubricated plug valves)
Warren Engineering Co., Broadway, N. J.
Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Webster Electric Co., Racine, Wis.
Whittaker Controls, A Div. of Telecomputing Corp., Los Angeles, Calif.

VALVES, VACUUM

Airserco Mfg. Co., Pittsburgh, Pa.
Barworth, Inc., Springfield, N. J.
Beacon Brass Co., Waltham, Mass.
Circle Seal Products Co., Inc., Pasadena, Calif.
General Controls Co., Glendale, Calif.
Hills-McCanna Co., Chicago, Ill.
Homestead Valve Mfg. Co., Coraopolis, Pa.
Hunt Valve Co., Div. of IBEC, Salem, O.
Jamesbury Corp., Worcester, Mass.
Kinney Vacuum Div., The New York Air Brake Co., Boston, Mass.
Multiplex Mfg. Co., Berwick, Pa.
Nuclear Products Co., Cleveland, O.
Simplex Valve & Meter Co., Lancaster, Pa.
Sinclair-Collins Valve Co., Div. of IBEC, Akron, O.
Stockham Valves & Fittings Co., Birmingham, Ala.
Superior Valve & Fittings, Co., Pittsburgh.
Valcor Engineering Corp., Kenilworth, N. J.

VALVES, WATER GAGE

Associated Valve Co., North Wales, Pa.
Cooper Alloy Corp., Hillside, N. J.
Crane Co., Chicago, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Edward Valves, Inc., East Chicago, Ind.
Ernst Water Column & Gauge Co., Livingston, N. J.
Henry Valve Co., Melrose Park, Ill.
Huyette Co., Inc., Paul B., Philadelphia, Pa.
Keckley Co., O. C., Skokie, Ill.
Longergan Co., J. E., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, O.
New York Air Valve Corp., Brooklyn, N. Y.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., Detroit, Mich.
Reliance Gauge Column Co., Cleveland, O.

VANES, DUCT TURNING, PREFABRICATED

Anemostat Corp. of America, New York, N. Y. (Equalizing deflectors)
Barber-Colman Co., Rockford, Ill.
Cain Mfg. Inc., Birmingham, Ala.
Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Elgen Mfg. Corp., Long Island City, N. Y.
Register & Grille Mfg. Co., Inc., Brooklyn.
Sound-Control Products Co., San Francisco, Calif. (acoustical)
Titus Mfg. Corp., Waterloo, Ia.
Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Waterloo Register Co., Inc., Waterloo, Ia.

VAPOR BARRIERS

See Barriers, Vapor

VAPOR HEATING SYSTEMS

See Systems, Heating, Vapor

VAPORIZERS FOR PROPANE-BUTANE

Buxton Mfg. Co., Dover, N. J.
Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.
Mitchell Co., John E., Dallas, Tex.
Mutual Liquid Gas & Equipment Co., Gardena, Calif.
Ransome Torch & Burner Co., Emeryville, Calif.

VARIABLE SPEED DRIVES

See Changers, Speed, Hydraulic Coupling; Changers Speed, Mechanical; Reducers, Speed; Pulleys and Sheaves, for Belt Drives

VARIABLE SPEED PULLEYS

See Changers, Speed, Mechanical

V-BELT DRIVES

See Drives, V-Belt

VELOCITY, REGULATORS

See Regulators, Air Velocity

VENT FLUE CAPS

See Caps, Vent Flue

VENTILATING HOSE

See Ducts and Duct Fittings, Prefabicated, Flexible and Non-Flexible, Metallic and Non-Metallic; Hose, Flexible, Metal and Fittings

VENTILATION HEATERS

See Surface, Finned, Heating; Ventilators, Roof, Fan; Ventilators, Unit

VENTILATORS, MUSHROOM

Aladdin Heating Corp., San Leandro, Calif.
Burt Mfg. Co., Akron, O.
Carnes Corp., Verona, Wis.
Chicago Blower Corp., Franklin Park, Ill.
Cook Co., Loren, Berea, O.
De Bothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.
Greenheck Fan & Ventilator Corp., Schofield, Wis.
Jenn-Air Products Co., Indianapolis, Ind.
Knight Co., Maurice A., Akron, O. (acid proof stoneware)
Knowles Mushroom Ventilator Co., Inc., Philadelphia, Pa.
Martin Fan & Blower Co., Chicago, Ill.
Muckle Mfg. Co., Owatonna, Minn.
Penn Ventilator Co., Philadelphia, Pa.
Porter Co., Inc., H. K., Peerless Electric Div., Warren, O.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Ritter Pattern & Casting Co., Inc., New York, N. Y.
Robinson Clay Product Co., Akron, O.
Swartwout Fabricators, Inc., Kokomo, Ind.
United Sheet Metal Co., Inc., Columbus, O.
Uno Ventilator Co., Malden, Mass.
Van Noorden Co., E., Boston, Mass.

VENTILATORS, ROOF, FAN

Acme Engineering & Mfg. Corp., Muskogee, Okla.
Aerovent Fan Co., Inc., Piqua, O.
Air Conditioning Engineering Co., Cambridge, Mass.
Airjet Ventilator Co., San Clemente, Calif.
Aladdin Heating Corp., San Leandro, Calif.
Allen Cooler & Ventilator, Inc., Rochester, Mich.
American Coolair Corp., Jacksonville, Fla.
American-Standard Industrial Div., Detroit, Mich.
Ammerman Co., Inc., Stillwater, Minn.
Arex Co., Chicago, Ill.
Bar-Brook Mfg. Co., Inc., Shreveport, La.
Bertram Co., Harvey P., The, Cincinnati, O.
Bowman Steel Corp., Pittsburgh, Pa.
Breidert Co., G. C., San Fernando, Calif.
Buffalo Forge Co., Buffalo, N. Y.
Burt Mfg. Co., Akron, O.
Carnes Corp., Verona, Wis.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Chelsea Fan & Blower Co., Inc., Subsid. of Chelsea Products, Inc., Plainfield, N. J.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Fan & Ventilating Co., Cincinnati, O.
Clarage Fan Co., Kalamazoo, Mich.
Clay Equipment Corp., Cedar Falls, Ia.
Colt Ventilation of America, Inc., Los Angeles, Calif.
Commercialaire Corp. of America, Brooklyn, N. Y.
Consolidated General Products, Inc., Houston, Tex.
Cook Co., Loren, Berea, O.
Dana Fan & Blower Corp., Cincinnati, O.
Davidson Fan Co., Newton, Mass.
De Bothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.
Donaldson Power Ventilator Co., Los Angeles, Calif.
Dryer Dynamics Corp., Lyndhurst, N. J.
Electrovent Fan & Mfg. Co., Chicago, Ill.

Empire Ventilation Equipment Co., Long Island City, N. Y.
Exit-Aire Co., Pacoima, Calif.
Gallaher Co., The, Omaha, Neb.
Genie-Air, Los Angeles, Calif.
Greenheck Fan & Ventilator Corp., Schofield, Wis.
Hamilton Fan & Blower Co., Inc., Cincinnati.
Hartzell Propeller Fan Co., Piqua, O.
Hayes Furnace Mfg. & Supply Co., Torrance, Calif.
Heating Assurance, Inc., Spokane, Wash.
Hirschman-Pohle Co., Inc., LeRoy, N. Y.
Hudson Mfg. Co., H. D., Chicago, Ill.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
International Engineering, Inc., Dayton, O.
Iona Ventilator Co., Inc., Philadelphia, Pa.
Iron Lung Ventilator Co., Cleveland, O.
Jeffrey Mfg. Co., Columbus, O.
Jenn-Air Products Co., Indianapolis, Ind.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
King Co. of Owatonna, The, Owatonna, Minn.
Kody Blower Co., Trenton, N. J.
M & E Mfg. Co., Indianapolis, Ind.
Martin Fan & Blower Co., Chicago, Ill.
Midwest Airmoving Corp., Willoughby, O.
Moore Co., The, Marceline, Mo.
Mountain States Equipment Co., Denver, Colo.
Muckle Mfg. Co., Owatonna, Minn.
New York Blower Co., Chicago, Ill.
Newcomb-Detroit Co., Detroit, Mich.
Octagon Ventilator Mfg. Co., Jackson, Tenn.
Penn Ventilator Co., Philadelphia, Pa.
Porter Co., Inc., H. K., Peerless Electric Div., Warren, O.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., Plainfield, N. J.
Propellair Div., Robbins & Myers Inc., Springfield, O.
Reed Unit-Fans, Inc., New Orleans, La.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Robertson Co., H. H., Pittsburgh, Pa.
Romla Co., Los Angeles, Calif.
Sargent Enginairing Co., Cleveland, O.
South Bend Air Products, Inc., South Bend, Ind.
Structa-Lung Co., The, Willoughby, O.
Swartwout Fabricators, Inc., Kokomo, Ind.
Trane Co., The, La Crosse, Wis. (available with heating coils)
Triangle Engineering Co., Houston, Tex.
Truflo Fan Co., Harmony, Pa.
Uno Ventilator Co., Malden, Mass.
Van Noorden Co., E., Boston, Mass.
Waverly Heating Supply Co., Beverly, Mass.
Westinghouse Electric Corp., Sturtevant Div., Hyde Park, Boston, Mass.
Western Engineering & Mfg. Co., Los Angeles, Calif.
Wind-Way Fan & Ventilator Co., New Orleans, La.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

VENTILATORS, ROOF, GRAVITY

Accurate Sheet Metal & Mfg. Works, Inc., Chicago, Ill.
Air Control Products, Inc., Coopersville, Mich.
Air Devices, Inc., New York, N. Y.
Airjet Ventilator Co., San Clemente, Calif.
Airtron Corp., Div. of the Higgins Metal Products Co., Swanton, O.
Allen Cooler & Ventilator, Inc., Rochester, Mich.
American Foundry & Furnace Co., Bloomington, Ill.
American Metal Works, Inc., New Orleans.
Ammerman Co., Inc., Stillwater, Minn.
Arex Co., Chicago, Ill.
Bowman Steel Corp., Pittsburgh, Pa.
Breidert Co., G. C., San Fernando, Calif.
Brisk Metal Products, Ridgefield, N. J.
Burt Mfg. Co., Akron, O.
Carnes Corp., Verona, Wis.
Century Fan & Ventilator Co., Inc., Stamford, Conn.
Clay Equipment Corp., Cedar Falls, Ia.
Colt Ventilation of America, Inc., Los Angeles, Calif.
Cook Co., Loren, Berea, O.
Donaldson Power Ventilator Co., Los Angeles, Calif.
Empire Ventilation Equipment Co., Long Island City, N. Y.
Excelsior Steel Furnace Co., Chicago, Ill.
Exit-Aire Co., Pacoima, Calif.
Greenheck Fan & Ventilator Corp., Schofield, Wis.
Hirschman-Pohle Co., Inc., LeRoy, N. Y.
Hudson Mfg. Co., H. D., Chicago, Ill.
Inland Steel Products Co., Milwaukee, Wis.
International Metal Products, Phoenix, Ariz.
Iona Ventilator Co., Inc., Philadelphia, Pa.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Klauer Mfg. Co., Dubuque, Ia.
La Crosse Steel Roofing & Corrugating Co., La Crosse, Wis.
Leslie Welding Co., Inc., Franklin Park, Ill.
Levow, Inc., David, South Hackensack, N. J.
Maple City Furnace Co., Monmouth, Ill.
Moeschl-Edwards Corrugating Co., Inc., The, Cincinnati, O.
Octagon Ventilator Mfg. Co., Jackson, Tenn.
Penn Ventilator Co., Philadelphia, Pa.
Plasteel Products Corp., Washington, Pa.
Puhl & Hepper Mfg. Co., Inc., St. Louis, Mo.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Robertson Co., H. H., Pittsburgh, Pa.
Romla Co., Los Angeles, Calif.
Swartwout Fabricators, Inc., Kokomo, Ind.
Tierney Rotor Ventilator Co., Minneapolis.
Triangle Engineering Co., Houston, Tex.
United Sheet Metal Co., Inc., Columbus, O.
Uno Ventilator Co., Malden, Mass.
Van Noorden Co., E., Boston, Mass.
Walker Jamar Co., Duluth, Minn.
Walker Mfg. & Sales Co., St. Joseph, Mo.
Warner Ventilator Co., La Grange, Ind.
Waverly Heating Supply Co., Beverly, Mass.
Western Engineering & Mfg. Co., Los Angeles, Calif.

VENTILATORS, ROOF, WITH FUSIBLE LINKS, FOR VENTING PRODUCTS OF COMBUSTION

Airjet Ventilator Co., San Clemente, Calif.
American Metal Works, Inc., New Orleans.
Bertram Co., The Harvey P., Cincinnati, O.
Burt Mfg. Co., Akron, O.
Chicago Blower Corp., Franklin Park, Ill.
Colt Ventilation Co. of America, Inc., Los Angeles, Calif.
Construction Specialties, Inc., Cranford, N. J.
De Bothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.
Iona Ventilator Co., Inc., Philadelphia, Pa.
Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Kody Blower Co., Trenton, N. J.
Mahon Co., R. C., The, Detroit, Mich.
Penn Ventilator Co., Philadelphia, Pa.
Propellair Div., Robbins & Myers, Inc., Springfield, O.
Reynolds Ventilator Mfg. Corp., Chicago, Ill.
Robertson Co., H. H., Pittsburgh, Pa.
South Bend Air Products, Inc., South Bend, Ind.
Swartwout Fabricators, Inc., Kokomo, Ind.
Triangle Engineering Co., Houston, Tex.
Van Noorden Co., E., Boston, Mass.
Western Engineering & Mfg. Co., Los Angeles, Calif.
Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

VENTILATORS, UNIT, ELECTRIC HEATING ELEMENT

Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Lennox Industries Inc., Des Moines, Ia.
Nesbitt, Inc., John J., Philadelphia, Pa.
Vulcan Radiator Co., Hartford, Conn.
Wesix Electric Heater Co., San Francisco.
Wiegand Co., Edwin L., Pittsburgh, Pa.

VENTILATORS, UNIT, GAS

Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Lennox Industries Inc., Des Moines, Ia.
Norman Products Co., Inc., Columbus, O.
Tuck-Aire Furnace Co., San Francisco, Calif.

VENTILATORS, UNIT, HOT WATER AND STEAM

Blazer Corp., Passaic, N. J.
Gannon Co., Russell R., Cincinnati, O.
Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Kody Blower Co., Trenton, N. J.
Lennox Industries Inc., Des Moines, Ia.
Marlo Coil Co., St. Louis, Mo.
Nesbitt, Inc., John J., Philadelphia, Pa.
Rittling Corp., The, Buffalo, N. Y.
Schemenauer Mfg. Corp., Holland, O.
Trane Co., The, LaCrosse, Wis.
Valveblower Co. of Calif., Santa Fe Springs, Calif.
Vulcan Radiator Co., Hartford, Conn.
Wood Mfg. Co., A. R., Luverne, Minn.

VENTILATORS, VAULT

American District Telegraph Co., New York, N. Y.
Construction Specialties, Inc., Cranford, N. J.

VENTILATORS, WALL, FAN

Air Control Products, Inc., Coopersville, Mich.
Airtron Corp., Div. of the Higgins Metal Products Co., Swanton, O.
Aladdin Heating Corp., San Leandro, Calif.
American Coolair Corp., Jacksonville, Fla.
American-Standard Industrial Div., Detroit.
Ammerman Co., Inc., Stillwater, Minn.
Barnebey-Cheney Co., Columbus, O. (with activated charcoal)
Bertram Co., Harvey P., The, Cincinnati, O.
Buffalo Forge Co., Buffalo, N. Y.
Carnes Corp., Verona, Wis.
Chelsea Fan & Blower Co., Inc., Subsid. of Chelsea Products, Inc., Plainfield, N. J.
Cincinnati Fan & Ventilating Co., Cincinnati, O.
Colt Ventilation Co. of America, Inc., Los Angeles, Calif.
Commercialaire Corp. of America, Brooklyn, N. Y.
Consolidated General Products, Inc., Houston, Tex.
Cook Co., Loren, Berea, O.
DeBothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.
Emerson Electric Mfg. Co., St. Louis, Mo.
Exit-Aire Co., Pacoima, Calif.
Fasco Industries, Inc., Rochester, N. Y.
Gallaher Co., The, Omaha, Nebr.
Greenheck Fan & Ventilator Corp., Schofield, Wis.
Hudson Mfg. Co., H. D., Chicago, Ill.
Hunter Div., Robbins & Myers, Inc., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
Jenn-Air Products Co., Indianapolis, Ind.
Kody Blower Co., Trenton, N. J.
Martin Fan & Blower Co., Chicago, Ill.
NuTone, Inc., Cincinnati, O.
Phelps Fans Mfg. Co., Little Rock, Ark.
Power Line Fan Co., Inc., Subsid. of Chelsea Products, Inc., Plainfield, N. J.
Romla Co., Los Angeles, Calif.
Triangle Engineering Co., Houston, Tex.
Whirlwind Mfg. Co., Houston, Tex.

VENTS, RELIEF, AND INTAKE, AIR

Accurate Sheet Metal & Mfg. Works, Inc., Chicago, Ill.
Ammerman Co., Inc., Stillwater, Minn.
Bertram Co., The Harvey P., Cincinnati, O.
Breidert Co., G. C., San Fernando, Calif.
Carnes Corp., Verona, Wis.
Cook Co., Loren, Berea, O.
Corbman Brothers, Inc., Philadelphia, Pa.
Exit-Aire Co., Pacoima, Calif.
Greenheck Fan & Ventilator Corp., Schofield, Wis.
Ilg Electric Ventilating Co., Chicago, Ill.
Iona Ventilator Co., Inc., Philadelphia, Pa.
Jenn-Air Products Co., Indianapolis, Ind.
Jordan & Co., Inc., Paul R., Indianapolis.
Kody Blower Co., Trenton, N. J.
Leslie Welding Co., Inc., Franklin Park, Ill.
Muckle Mfg. Co., Owatonna, Minn.
Senrac Industries, Madison, Wis.
Somers Corp., Detroit, Mich.
Swartwout Fabricators, Inc., Kokomo, Ind.
Universal Valve Co., Elizabeth, N. J.
Uno Ventilator Co., Malden, Mass.

VIBRATION DETECTORS

See Detectors, Vibration

VIBRATION ISOLATORS

See Absorbers, Vibration; Bases, Vibration Isolating, Pad Type; Bases, Vibration Isolating, Spring Type; Hose, Flexible, Metal and Fittings

VISCOSIMETERS

American Instrument Co., Inc., Silver Spring, Md.
Bendix Corp., The, Cincinnati Div., Cincinnati, O.
Brabender Corp., Rochelle Park, N. J. (recording)
Bristol Co., The, Waterbury, Conn.
Brookfield Engineering Laboratories, Inc., Stoughton, Mass.
Drage Products, Inc., Union City, N. J.
Fischer & Porter Co., Warminster, Pa.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Humboldt Mfg. Co., Chicago, Ill.
Scientific Instrument Co., Detroit, Mich.
Thomas Co., Arthur H., Philadelphia, Pa.
Thomas Industries, Inc., Electric Sprayit Div., Sheboygan, Wis.
Tipptronics, Inc., Chagrin Falls, O.
Will Corp., Rochester, N. Y.

VISES, PIPE

American Pipe Tool Co., Chicago, Ill.
Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Columbian Vise & Mfg. Co., Cleveland, O.
Desmond-Stephan Mfg. Co., Urbana, O.
Erie Tool Wks., Erie, Pa.
Fine Products Co., Berwyn, Ill.
Nye Tool Co., Chicago, Ill.
Reed Mfg. Co., Erie, Pa.
Ridge Tool Co., Elyria, O.
Sac Tool Mfg. Co., St. Louis, Mo.
Springload Mfg. Corp., Seattle, Wash.
Starbuck & Sons Inc., R. M., Hartford, Conn.
Talon Tools, Inc., North Arlington, N. J.
Toledo Pipe Threading Machine Co., Toledo, O.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.
Vanderman Mfg. Co., Willimantic, Conn.
Western Wire Products Co., St. Louis, Mo.
Williams & Co., J. H., Buffalo, N. Y.
Yost Mfg. Co., Cambridge Springs, Pa.

VISES, SHEET METAL WORKERS'

Columbian Vise & Mfg. Co., Cleveland, O.
Desmond-Stephan Mfg. Co., Urbana, O.
Erie Tool Works, Erie, Pa.
Milton Equipment Co., Philadelphia, Pa.
Yost Mfg. Co., Cambridge Springs, Pa.

VOLTMETERS

Assembly Products, Inc., Chesterland, O.
Bristol Co., The, Waterbury, Conn. (recording)
Columbia Electric Mfg. Co., Cleveland, O.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
EPIC, Inc., New York, N. Y.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Pyramid Instrument Corp., Lynbrook, Long Island, N. Y.
Robinair Mfg. Corp., Montpelier, O.
Sangamo Electric Co., Springfield, Ill.

WARM AIR FURNACES

See Furnaces, Warm Air

WASHERS, AIR

Air & Refrigeration Corp., New York, N. Y.
Air-Cooling Engineering Co., Evanston, Ill.
Airfan Engineering Co., Los Angeles, Calif.
Alton Mfg. Co., Dallas, Tex.
American-Standard Industrial Div., Detroit.
Bahnson Co., Winston-Salem, N.C.
Bayley Blower Co., A Div. of the Green Fuel Economizer Co., Inc., Milwaukee, Wis.
Buensod-Stacey Corp., New York, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Centri-Spray Corp., Livonia, Mich. (Wet type)
Century Engineering Corp., Cedar Rapids, Ia.
Clarage Fan Co., Kalamazoo, Mich.
Comfort Products Inc., Dallas, Tex.
Continental Air Filters, Inc., Louisville, Ky.
DeVilbiss Co., The, Toledo, O.
DeVilbiss Metal Fabricators Co., Detroit, Mich.
Donaldson Power Ventilator Co., Los Angeles, Calif.
Drying Systems Co., Chicago, Ill.
Ducon Co., Inc., The, Mineola, N. Y.
Gaffers & Sattler, Los Angeles, Calif.
Johnson-March Corp., Philadelphia, Pa.
Mahon Co., R. C., The, Detroit, Mich.
Marlo Coil Co., St. Louis, Mo.
Master Fan Corp., Los Angeles, Calif.
Mountain States Equipment Co., Denver, Colo.
Parks-Cramer Co., Fitchburg, Mass.
Schmieg Industries Inc., Detroit, Mich.
Schneible Co., Claude B., Detroit, Mich.
Spray Engineering Co., Burlington, Mass.
Surface Combustion Corp., Toledo, O.
Trane Co., The, LaCrosse, Wis.
Western Blower Co., Seattle, Wash.
York Div., Borg-Warner Corp., York, Pa.

WASHERS, FUME

Air Pollution Control Div., John Wood Co., Bernardsville, N. J.
Argo Plastic Products, Cleveland, O.
Burdett Mfg. Co., Chicago, Ill.
Buffalo Forge Co., Buffalo, N. Y.
Centri-Spray Corp., Livonia, Mich. (wet type)
Ducon Co., Inc., The, Mineola, N. Y.
DuVerre, Inc., Buffalo, N. Y. (plastic)
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (plastic & ceramic)
Heil Process Equipment Corp., Cleveland, O.
Industrial Plastic Fabricators, Norwood, Mass. (PVC)
Johnson-March Corp., Philadelphia, Pa.
Knight Co., Maurice A., Akron, O. (Wet type for acids)
Mahon Co., R. C., The, Detroit, Mich.
Master Fan Corp., Los Angeles, Calif.
Oxy Catalyst, Inc., Wayne, Pa.
Peabody Engineering Corp., New York, N. Y.
Schmieg Industries, Inc., Detroit, Mich.
Schneible Co., Claude B., Detroit, Mich.
United States Stoneware Co., New York, N. Y.

WATER CHILLERS

See Chillers, Water, for Air Conditioning and Refrigeration, Compressors, Refrigerating, Combined with Condenser, Water Chiller, Piping Connections, and Controls

WATER CONDITIONERS

See Conditioners, Water; Treatment, Water

WATER DISTRIBUTORS FOR CONDENSERS

See Distributors, Water, for Condensers

WATER HAMMER ELIMINATORS

See Absorbers, Shock, Liquid

WATER RAMS FOR CLEANING OUT PIPE LINES

See Rams, Water

WATER STERILIZER, ULTRAVIOLET

See Units, Sterilizing, Water

WATER TREATMENT

See Treatment, Water; Devices, Electrolytic, for Preventing Corrosion

WATTMETERS

Assembly Products, Inc., Chesterland, O.
Daystrom, Inc., Weston Instruments Div., Newark, N. J.
EPIC, Inc., New York, N. Y.
General Electric Co., Apparatus Sales Div., Schenectady, N. Y.
Robinair Mfg. Corp., Montpelier, O.
Sangamo Electric Co., Springefild, Ill.
Westinghouse Electric Corp., Pittsburgh, Pa.

WELD TESTING MACHINES

See Machines, Testing, Weld

WELDERS, ARC

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Borm Mfg. Co., Elgin, Ill.
Burdett Oxygen Co. of Calif., Huntington Park, Calif.
Caterpillar Tractor Co., Engine Div., Peoria, Ill.
Electric Arc, Inc., Newark, N. J.
Emerson Electric Mfg. Co., The, St. Louis, Mo.
Ergolyte Mfg. Co., Philadelphia, Pa.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Fern, Ralph, Scranton, Pa.
General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.
Hammett Electric Co., Kansas City, Kans.
Harnischfeger Corp., Milwaukee, Wis.
Hobart Bros. Co., Troy, O.
Lincoln Electric Co., Cleveland, O.
Linde Co., Div. of Union Carbide Corp., New York, N. Y. (Inert gas-shielded)
Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.
Metal & Thermit Corp., Rahway, N. J.
Mid-States Welder Mfg. Co., Chicago, Ill.
Miller Electric Mfg. Co., Inc., Appleton, Wis.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Peer, Inc., Benton Harbor, Mich.
Precision Welder Mfg. Co., Chicago, Ill.
Rexarc, Inc., West Alexandria, O.
Smith Corp., A. O., Milwaukee, Wis.
Trindl Products, Ltd., Chicago, Ill.
Tweco Products Inc., Wichita, Kan. (Cable connectors, electrode holders and accessories and welding cable)
United Specialties, Inc., El Dorado, Ark. (welding cable reel)
Welding Apparatus Co., Chicago, Ill.
Weldit, Inc., Detroit, Mich.
Westinghouse Electric Corp., WEST-ING-ARC Dept., Buffalo, N. Y.

WELDERS, FOR PLASTIC PIPE OR PLASTIC SHEET

American Agile Corp., Bedford, O.
Argo Plastic Products, Cleveland, O.
Industrial Plastic Fabricators, Norwood, Mass.
Laramy Products Co., Hingham, Mass.
Saran Lined Pipe Co., Ferndale, Mich. (electric & acetylene types)
Seelye Craftsmen, Inc., Minneapolis, Minn.

WELDERS, SPOT

Acme Electric Welder Co., Los Angeles, Calif.
Acro Welder Mfg. Co., Milwaukee, Wis.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Alphil Spot Welder Mfg. Corp., Brooklyn, N. Y.
Delta Welder Corp., Detroit, Mich.
Duro-Dyne Corp., Farmingdale, L. I., N. Y. (portable)
Eisler Engineering Co., Inc., Newark, N. J.
Electric Arc, Inc., Newark, N. J.
Fern, Ralph, Scranton, Pa.
General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.
Hammett Electric Co., Kansas City, Kans.
Hobart Bros. Co., Troy, O.
Linde Co., Div. of Union Carbide Corp., New York, N. Y. (Inert gas-shielded arc)
Mallory & Co., Inc., P. R., Indianapolis, Ind. (electrode holders)
Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.
Micro Products Co., Chicago, Ill.
Mid-States Welder Mfg. Co., Chicago, Ill.
Miller Electric Mfg. Co., Inc., Appleton, Wis.
Milton Equipment Co., Philadelphia, Pa.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Nielsen, Inc., E. V., Stamford, Conn.
Peer, Inc., Benton Harbor, Mich.
Research Vacuum Supply Co., Chicago, Ill.
Rex Welder Co., Kansas City, Mo.
Sciaky Bros., Inc., Chicago, Ill.
Taylor-Winfield Corp., Warren, O.
Thompson Electric Welder Co., Lynn, Mass.
Universal Welder Corp., Cleveland, O.
Weldex, Inc., Southfield, Mich.
Weldit, Inc., Detroit, Mich.

WELDERS, STUD

Allied Weld-Craft, Inc., Indianapolis, Ind.
Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Eisler Engineering Co., Inc., Newark, N. J.
Hammett Electric Co., Kansas City, Kans.
KSM Products, Inc., Moorestown, N. J.
Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, O.
Omark Industries, Inc., Portland, Ore.
Westinghouse Electric Corp., WEST-ING-ARC Dept., Buffalo, N. Y.

WELDING AND CUTTING APPARATUS, OXY-ACETYLENE

Air Products, Inc., Allentown, Pa.
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Allied Weld-Craft, Inc., Indianapolis, Ind.
Arcos Corp., Philadelphia, Pa. (arc-oxygen)
Atlas Welding Accessories Inc., Ferndale, Mich. (Weld cleaning tools)
Dockson Corp., Detroit, Mich.
Eutectic Welding Alloys Corp., Flushing, N. Y.
Evans Machine Co., Inc., Baltimore, Md.
General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.
General Scientific Equipment Co., Philadelphia, Pa.
Goss Gas, Inc., Glenshaw, Pa.
Harris Calorific Co., The, Cleveland, O.
K-G Equipment Co., Allentown, Pa.
Lenco, Inc., Jackson, Mo.
Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.
Mir-O-Col Alloy Co., Inc., Los Angeles, Calif.
Modern Engineering Co., St. Louis, Mo.
National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Rexarc, Inc., West Alexandria, O. (portable and stationary acetylene generators)
Smith Welding Equipment Corp., Minneapolis, Minn.
Steffan Mfg. Corp., Salem, O.
United Specialties, Inc., El Dorado, Ark. (welding hose reel)
Universal Cutting & Welding Equipment Mfg. Co., Ft. Lauderdale, Fla.
Vernon Tool Co., Ltd., Alhambra, Calif.
Victor Equipment Co., Welding Equipment Div., San Francisco, Calif.
Weldit, Inc., Detroit, Mich.

WELDING COMPOUNDS

See Compounds, Welding

WELDING FUME COLLECTORS

See Exhausters, Welding Fume

WELDING RINGS

See Rings, Backing, for Pipe Welding

WELLS, THERMOMETER

Airserco Mfg. Co., Pittsburgh, Pa.
Bristol Co., The, Waterbury, Conn.
Campbell Co., J. A., Long Beach, Calif.
Corning Glass Works, Corning, N. Y.
Dickson Co., The, Chicago, Ill.
Engelhard Industries, Inc., Instruments & Systems Div., East Newark, N. J.
Foxboro Co., Foxboro, Mass.
General Ceramics Div. of Indiana General Corp., Keasbey, N. J. (graphite)
H-B Instrument Co., Philadelphia, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Moeller Instrument Co., Richmond Hill, N. Y.
Pacific Transducer Corp., Los Angeles, Calif.
Palmer Thermometers, Inc., Cincinnati (Norwood), O.
Philadelphia Thermometer Co., Philadelphia.
Precision Thermometer & Instrument Co., Philadelphia, Pa.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Robinair Mfg. Corp., Montpelier, O.
Rochester Mfg. Co., Inc., Rochester, N. Y.
Tagliabue Div., Marshalltown Mfg., Inc., Marshalltown, Ia.
Taylor Instrument Companies, Rochester, N. Y.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Trerice Co., H. O., Detroit, Mich.
Weksler Instruments Corp., Freeport, L. I., N. Y.

WHEELS, BLOWER

Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland, O.
Airfan Engineering Co., Los Angeles, Calif.
American-Standard Industrial Div., Detroit, Mich.
Barry Blower Co., Minneapolis, Minn.
Bayley Blower Co., A Div. of the Green Fuel Economizer Co., Inc., Milwaukee, Wis.
Bronson Fan Mfg. Corp., Los Angeles, Calif.
Brundage Co., The, Kalamazoo, Mich.
Carolina Blower Co., Inc., Greensboro, N. C.
Champion Blower & Forge Co., Lancaster, Pa.
Chicago Blower Corp., Franklin Park, Ill.
Cincinnati Fan & Ventilator Co., Cincinnati, O.
Clarage Fan Co., Kalamazoo, Mich.
Denbo Engineering & Sales Co., Inc., Indianapolis, Ind. (molded plastics)
Gaffers & Sattler, Los Angeles, Calif.
Garden City Fan & Blower Co., Chicago, Ill.
General Blower Co., Subsid. Ilg Electric Ventilating Co., Morton Grove, Ill.
Hastings Air Control, Inc., Omaha, Nebr.
Industrial Plastic Fabricators, Norwood, Mass (PVC)
Jan-Air, Inc., Richmond, Ill.
Lau Blower Co., Dayton, O.
Mamco Corp., Racine, Wis.
Martin Fan & Blower Co., Chicago, Ill.
Master Fan Corp., Los Angeles, Calif.
Mayne Products Co., Dayton, O.
Moore Co., The, Marceline, Mo.
Morrison Products, Inc., Cleveland, O.
New York Blower Co., Chicago, Ill.
Porter Co., Inc., H. K., Peerless Electric Div., Warren, O.
Power Engineering Corp., Mingo Jct., O.
R & R Metal Products, Inc., Chicago, Ill.
Revcor Inc., Carpentersville, Ill.
Ripley Co., Inc., Middletown, Conn.
Torrington Mfg. Co., Torrington, Conn.
U.S. Air Conditioning Corp., Delaware, O.
Utility Fan Corp., Div. of Utility Appliance Corp., Los Angeles, Calif.
Viking Air Products, Div. of the Lau Blower Co., Cleveland, O.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

WHISTLES AND HORNS, STEAM AND AIR

Leslie Co., Lyndhurst, N. J.
Powell Co., Wm., The, Cincinnati, O.
Wheelock Signals, Inc., Long Branch, N. J.

WHITE PRINT MACHINES

See Machines, Blue Print and White Print

WINDOW PANELS FOR AIR CONDITIONERS

See Panels, Window, for Air Conditioners

WINDOW VENTILATOR AND FILTER UNITS

See Units, Window Ventilator and Filter

WINDOWS, HEAT INSULATING

Anderson Corp., Bayport, Minn.
Chamberlin Co. of America, Detroit, Mich.
Libbey-Owens-Ford Glass Co., Toledo, O.
Mississippi Glass Co., St. Louis, Mo.
Pam Co., The, Portland, Ore. (skylight)
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Rusco, A Div. of the F. C. Russell Co., Pandora, O.
Southern Plastics Co., Columbia, S. C.

WIRE, ELECTRIC, NUMBERED, FOR CONTROL SYSTEMS

Chester Cable Corp., Subsid. of Tennessee Corp., Chester, N. Y.
Electric Autolite Co., Toledo, O.
Essex Wire Corp., Ft. Wayne, Ind.
Gavitt Wire & Cable Co., Div. of Amerace Corp., Brookfield, Mass.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
Midwest Air Conditioning Co., Des Moines, Ia.
Moore & Co., Samuel, Mantua, O. (also for instrumentation)
Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.
Westline Products Div. of Western Lithograph Co., Los Angeles, Calif.

WIRE, INSTRUMENT

Anaconda American Brass Co., Waterbury, Conn.
Chester Cable Corp., Subsid. of Tennessee Corp., Chester, N. Y.
Essex Wire Corp., Ft. Wayne, Ind.
Foxboro Co., Foxboro, Mass.
Gavitt Wire & Cable Co., Div. of Amerace Corp., Brookfield, Mass.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.
Thermo Electric Co., Inc., Saddle Brook, N. J.

WIRE, OIL BURNER IGNITION

Chester Cable Corp., Subsid. of Tennessee Corp., Chester, N. Y.
Dielectric Products Co., Inc., Jersey City, N. J.
Essex Wire Corp., Ft. Wayne, Ind.
Phelps Dodge Copper Products Corp., New York, N. Y.

WIRING, COMPLETE ASSEMBLIES, CUSTOM-MADE

Airserco Mfg. Co., Pittsburgh, Pa.
Cornish-Wire Co., Inc., Williamstown, Mass. (flexible and fixture wire cordsets)
Curtis Development & Mfg. Co., Milwaukee, Wis.
Dielectric Products Co., Inc., Jersey City, N. J.
Electric Autolite Co., Toledo, O.
Essex Wire Corp., Ft. Wayne, Ind.
Gavitt Wire & Cable Co., Div. of Amerace Corp., Brookfield, Mass.
General Electric Co., Construction Materials Sales Operation, Bridgeport, Conn.
Hammett Electric Co., Kansas City, Kans.
Kulka Electric Corp., Mt. Vernon, N. Y.

WRAP, PIPE

Canvas Products Co., St. Louis, Mo.
Johns-Manville Corp., New York, N. Y.
Minnesota Mining & Mfg. Co., St. Paul.
Mortell Co., J. W., Kankakee, Ill.
Rhopac, Inc., Skokie, Ill.
Tapecoat Co., The, Evanston, Ill. (cool tar protective coating in tape form for pipe, pipe joints, pipe fittings, insulated pipe underground and above ground.)
Zippertubing Co., The, Los Angeles, Calif.

WRENCHES, AIR OPERATED

Albertson & Co., Inc., Sioux City, Ia. (impact)
Black & Decker Mfg. Co., The, Towson, Md.
Chicago Pneumatic Tool Co., New York, N. Y.
Dotmar Industries, Inc., Kalamazoo, Mich.
Ingersoll-Rand Co., New York, N. Y.
Remington Arms Co., Inc., Bridgeport, Conn.
Skil Corp., Chicago, Ill.
Thor Power Tool Co., Aurora, Ill.

WRENCHES, CHAIN, PIPE

Aladdin's Products, Inc., Columbus, O.
Armstrong Bros. Tool Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Chicago Specialty Mfg. Co., Chicago, Ill.
Nye Tool Co., Chicago, Ill.
Owatonna Tool Co., Owatonna, Minn.
Reed Mfg. Co., Erie, Pa.
Talon Tools, Inc., North Arlington, N. J.
Toledo Pipe Threading Machine Co., Toledo.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.
Williams Co., J. H., Buffalo, N. Y.

WRENCHES, ELECTRICALLY OPERATED

Albertson & Co., Inc., Sioux City, Ia. (impact)
Black & Decker Mfg. Co., The, Towson, Md.
Chicago Pneumatic Tool Co., New York, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Portable Electric Tools, Inc., Geneva, Ill. (impact)
Skil Corp., Chicago, Ill.
Thor Power Tool Co., Aurora, Ill.

WRENCHES, PIPE

American Machine Wks., Inc., Racine, Wis.
Ampco Metal, Inc., Milwaukee, Wis.

Armstrong-Bridgeport Tool Mfg. Corp., Belleville, N. J.
Armstrong Bros. Tool Co., Chicago, Ill.
Basford Co., H. R., San Francisco, Calif.
Billings & Spencer Co., Hartford, Conn.
Bonney Forge & Tool Works, Allentown, Pa.
Crescent Tool Co., Jamestown, N. Y.
Custanite Corp., Brooklyn, N. Y.
Duro Metal Products Co., Chicago, Ill.
Erie Tool Works, Erie, Pa.
Fairmount Tool & Forging, Inc., Cleveland.
Frontier Bronze Corp., Niagara Falls, N. Y.
Lowell Wrench Co., Worcester, Mass.
Lurie & Lurie, Chicago, Ill.
Nielsen, Inc., E. V., Stamford, Conn.
Nye Tool Co., Chicago, Ill.
Peck, Stow & Wilcox Co., Southington, Conn.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Ridge Tool Co., Elyria, O.
Roddick Tool Co., Anaheim, Calif.
Sac Tool Co., St. Louis, Mo.
Schick Products, Inc., Belmont, Calif.
St. Pierre Chain Corp., Worcester, Mass.
Snap-on Tools Corp., Kenosha, Wis.
Talon Tools, Inc., North Arlington, N. J.
Tedd Company, The, Rockford, Ill.
Toledo Pipe Threading Machine Co., Toledo, O.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.
Wheeler Mfg. Corp., The, Ashtabula, O. (sliding jaw and self adjusting)

WRENCHES, PIPE, REPLACEABLE JAW

Ampco Metal, Inc., Milwaukee, Wis.
Armstrong Bros. Tool Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Crescent Tool Co., Jamestown, N. Y.
Erie Tool Wks., Erie, Pa.
Lurie & Lurie, Chicago, Ill.
Nye Tool Co., Chicago, Ill.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Ridge Tool Co., Elyria, O.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.

WRENCHES, RATCHET

Ampco Metal, Inc., Milwaukee, Wis.
Armstrong Bros. Tool Co., Chicago, Ill.
Billings & Spencer Co., Hartford, Conn.
Bonney Forge & Tool Works, Allentown, Pa.
Custanite Corp., Brooklyn, N. Y.
Duro Metal Products Co., Chicago, Ill.
Fairmount Tool & Forging, Inc., Cleveland, O.
Gardner-Denver Co., Quincy, Ill.
Greene, Tweed & Co., North Wales, Pa.
Kent-Moore Organization, Inc., Warren, Mich.
Lowell Wrench Co., Worcester, Mass.
Lurie & Lurie, Chicago, Ill.
Owatonna Tool Co., Owatonna, Minn.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Sac Tool Mfg. Co., St. Louis, Mo.
Snap-on Tools Corp., Kenosha, Wis.
Wiedeke Co., The Gustav, Dayton, O.
Williams & Co., J. H., Buffalo, N. Y.

WRENCHES, TORQUE INDICATING

Ammco Tools, Inc., North Chicago, Ill.
Armstrong Bros. Tool Co., Chicago, Ill.
Bonney Forge & Tool Works, Allentown, Pa.
Duro Metal Products Co., Chicago, Ill.
Fairmount Tool & Forging, Inc., Cleveland, O.
Ingersoll-Rand Co., New York, N. Y. (for torque control)
JO-Line Tools, Inc., South Gate, Calif.
Kent-Moore Organization, Inc., Warren, Mich.
Owatonna Tool Co., Owatonna, Minn.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., Los Angeles, Calif.
Richmont, Inc., Monrovia, Calif.
Sac Tool Mfg. Co., St. Louis, Mo.
Snap-on Tools Corp., Kenosha, Wis.
Sturtevant Co., P. A., Addison, Ill.
Williams & Co., J. H., Buffalo, N. Y.
Wilson Co., K. R., Arcade, N. Y.
X-4 Corp., West Acton, Mass. (geared head)

X-RAY MACHINES AND FILM

See Machines and Film, X-Ray

ZONE CONTROLS

See Systems, Heating, Zone Control

DIRECTORY SECTION
HEATING, PIPING, AND AIR CONDITIONING EQUIPMENT FOR INDUSTRIAL AND ALL OTHER LARGE BUILDINGS

PART 3—ALL TRADE NAMES

A-3—Cleaning compounds. Airkem, Inc., New York, N. Y.
A-B—Motor controllers, pilot lights, regulators, relays, solenoids, switches. Allen-Bradley Co., Milwaukee, Wis.
ABC—Dehumidifiers, humidifiers. American-Standard Industrial Div., Detroit, Mich.
ABR-A-Saw—Cutters. Collins Machinery Corp., Monterey Park, Calif.
A-C—Water treatment. Elgin Softener Corp., Elgin, Ill.
ACB—Coatings. Tropical Paint & Oil Co., Cleveland, O.
ADP—Air diffusers, dampers, grilles, registers. Air Distribution Production Co., Los Angeles, Calif.
A-E Floor—Ducts and duct fittings. Granco Steel Products Co., St. Louis, Mo.
AISI Automatic Smoke Sampler—Testers, smoke. Research Appliance Co., Allison Park, Pa.
A & R—Dehumidifiers. Air & Refrigeration Corp., New York, N. Y.
ARR 300#—Unions. Jefferson Union Co., Lexington, Mass.
ARRC—Couplings, fittings, flanges, unions. Union Metal Wks. Co., Inc., Chelsea, Mass.
ASME—Regulators. Bell & Gossett Co., Morton Grove, Ill.
Abrasoweld—Electrodes. Lincoln Electric Co., Cleveland, O.
Abso-Dry—Refrigerant dehydrators. Henry Valve Co., Melrose Park, Ill.
Absolute—Air filters. Cambridge Filter Corp., Syracuse, N. Y.
Accurex—Pipe gages. Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Ace—Dampers. Marsto Machine Co., West Quincy, Mass.
Ace—Fittings, pipe, protective coatings, pumps, tanks, valves. American Hard Rubber Co., Div. Amerace Corp., Butler, N. J.
Ace-Flex—Plastic tubing. American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Ace Tempron—Fittings, pipe. American Hard Rubber Co., Div. of Amerace Corp., Butler, N. J.
Ace-Vent—Valves. Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Acipco—Steel tubing. American Cast Iron Pipe Co., Birmingham, Ala.
Ack-O-Matic—Boilers. Ackerman Gas Boiler Corp., McDonald, Pa.
Acolite—Enamels and lacquers. Acorn Refining Co., Cleveland, O.
Acoustikil—Sound absorbers, access doors and panels, noise elimination for cooling towers. Midwest Noise Control, Indianapolis, Ind.
Acoustilite—Insulation. Minnesota & Ontario Paper Co., Insulite Div., Minneapolis, Minn.
Acratherm—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Adacast—Refractories. Botfield Refractories Co., Philadelphia, Pa.
Adamant—Furnace cement, refractories and refractory cement. Botfield Refractories Co., Philadelphia, Pa.
Adapatch—Refractories. Botfield Refractories Co., Philadelphia, Pa.
Adastic—Insulating cement, insulation. Botfield Refractories Co., Philadelphia, Pa.
Add-A-Kem—Chemical feeders. Norcross Co., Sterling E., Bloomfield, N. J.
ADHECO—Tape. Adhesive Tape Corp., Brooklyn, N. Y.
Adjusta-Flo—Valves. Sullivan Valve & Engineering Co., Butte, Mont.
Adjusto-Deck—Racks. Haertel Co., Walter, Minneapolis, Minn.
Adjust-O-Feeder—Feeders, pumps, water treatment. B-I-F Industries, Proportioneers Div., Providence, R. I.
Adjust-O-Slide—Motor bases. American Pulley Co., The, Div. Van Norman Industries, Inc., Philadelphia, Pa.
Adsorbit—Air freshening compounds, adsorbers, filters. Barnebey-Cheney Co., Columbus, O.
Advance—Scaffolds. Beaver Advance Corp., Ellwood City, Pa.
Aerisweld—Electrodes. Lincoln Electric Co., Cleveland, O.
Aero—Aftercoolers, heat exchangers. Niagara Blower Co., New York, N. Y
Aero—Radiation, hangers or brackets. National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Aerodyne—Fans, ventilators. Jeffrey Mfg. Co., Columbus, O.
Aerodyne—Collectors. Green Fuel Economizer Co., Inc., The, Beacon, N. Y.
Aerofuse—Air diffusers. Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.
Aerolux—Unitary air conditioners. Johnson Co., S. T., Oakland, Calif.
Aeromaster—Propeller fans, blades. Koppers Company, Inc., Metal Products Div., Baltimore, Md.
Aeromatic—Roof ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.
Aeromatic Exhauster—Ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.
Aeropass—Condensers. Niagara Blower Co., New York, N. Y.
Aeropel—Ventilators. American-Standard Industrial Div., Detroit, Mich.
Aeroplane—Roof ventilators. Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Aeropull—Roof ventilators. Jordan & Co., Inc., Paul R., Indianapolis, Ind.
Aerosolve—Air filters. Cambridge Filter Corp., Syracuse, N. Y.
Aerospot—Fans. South Bend Air Products, Inc., South Bend, Ind.
Aerotube—Insulation. Johns-Manville Corp., New York, N. Y.
Aeroturn—Collectors. Koppers Co., Inc., Metal Products Div., Baltimore, Md.
Aerovane—Anemometers. Friez Instrument Div., Bendix Corp., Baltimore, Md.
Aerovane—Grilles, registers. Tuttle & Bailey Div. of Allied Thermal Corp., New Britain, Conn.
Aertite—Compounds. Johns-Manville Corp., New York, N. Y.
Afco—Heaters, unitary air conditioners. American Furnace Co., St. Louis, Mo.
Affco—Louvers and shutters, dampers. American Foundry & Furnace Co., Bloomington, Ill.
Agastat—Electrical relays. Elizabeth Div. of Elastic Stop Nut Corp. of America, Elizabeth, N. J.
Agaswitch—Time switches. Elizabeth Div. of Elastic Stop Nut Corp. of America, Elizabeth, N. J.
Agilene—Fittings, flanges, fume disposal hoods, fans, sheets, ducts and duct fittings, pipe, tubing, welders. American Agile Corp., Bedford, O.
Agilide—Ducts and duct fittings, fans, sheets, pipe, welders. American Agile Corp., Bedford, O.
Agitair—Air diffusers, frames for holding panel type air filters, air scoops, grilles, registers, mixing units, filters, dampers, ventilators. Air Devices, Inc., New York.
AIM Brand—Angles, bars, beams, channels and tees; pipe hangers and supports; pipe storage racks; tank stands. Acme Steel Co., Chicago, Ill.
Airace—Wrenches. Dotmar Industries, Inc., Kalamazoo, Mich.
Airacoustic—Insulation. Johns-Manville Corp., New York, N. Y.
Air-aid—Compounds. Lord & Clark Co., Inc., Boston, Mass.
Air Base—Diffusers. Kritzer Radiant Coils, Inc., Batavia, Ill.
Aircap—Ventilators. Penn Ventilator Co., Philadelphia, Pa.
Air Cell—Abestos insulation. Keasbey & Mattison Co., Ambler, Pa.
Air-Cell Board—Sheets and boards. Nicolet Industries, Inc., Florham Park, N. J.
Air Check—Boiler compounds. Refractory & Insulation Corp., New York, N.Y.
Airco—Arc welders, electrodes, weld testing, welding rod, solder, machines, torches, oxygen piping and regulating systems. Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., New York, N. Y.
Aircon—Condensers. McQuay, Inc., Minneapolis, Minn.
Air-Con—Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Aircoustat—Absorbers. Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Div., Baltimore, Md.
Airditioner—Unitary air conditioners. Modine Mfg. Co., Racine, Wis.
Airefiner—Water treatment. Oakite Products, Inc., New York, N. Y.
AIRefrigeration—Unitary air conditioners. Williamson Co., Cincinnati, O.
Aire-Rectifier—Coolers, unitary air conditioners. Lintern Corp., Painesville, O.
Airette—Roof ventilators. Penn Ventilator Co., Philadelphia, Pa.
Airex—Air washers, high pressure blowers, moisture testers, fans, unitary air conditioners, ventilators. Mountain States Equipment Co., Denver, Colo.
Airfeedrill—Electric and pneumatic drills. Gardner-Denver Co., Quincy, Ill.
Airflex—Couplings. Falk Corp., Milwaukee.
Air-flo—Louvers and shutters, dampers, regulators. Air Conditioning Products Co., Detroit, Mich.
Airfoil—Registers, scoops, perforated panels, grilles, dampers, diffusers. Titus Mfg. Corp., Waterloo, Ia.
Airfoil—Registers, scoops, grilles, dampers, diffusers. Titus Mfg. Corp., Waterloo, Ia.
Air Guide—Vanes. Titus Mfg. Corp., Waterloo, Ia.
Air Guide—Radiation. Rempe Co., Chicago.
Airicidin—Cleaning compounds. Easton R. S. Corp., Brooklyn, N. Y.
Airistocrat—Fan blades. Torrington Mfg. Co., Torrington, Conn.
Airjet—Stacks and chimneys. General Products Co., Inc., Fredericksburg, Va.
Airjector—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.
Air Kits—Blower wheels. New York Blower Co., Chicago, Ill.
Airlift—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.
Airline—Torches, welding and cutting apparatus. Smith Welding Equipment Corp., Minneapolis, Minn.
Air Line—Motors. Brown-Brockmeyer Co., Inc., Dayton, O.
Airliner—Fan blades, and fans. Burden Co., Alan E., Los Angeles, Calif.
Airlouver—Louvers and shutters. Swartwout Fabricators, Inc., Kokomo, Ind.
Air Master—Diffusers, grilles, registers. Austin Engineering & Mfg. Co., Inc., Ysleta, Tex.
Airmaster—Dehumidifiers. Haertel Co., Walter, Minneapolis, Minn.
Air Mat-PC—Filters. American Air Filter Co., Inc., Louisville, Ky.
Airmat Arrester—Dust collectors. American Air Filter Co., Inc., Louisville, Ky.
Airmat Drifilter—Filters. Airgard Mfg. Co. Chicago, Ill.
Air-Max—Dampers, diffusers, fans, unit heaters, ventilators. Gallaher Co., The, Omaha, Neb.
Air Meter—Air velocity meters. Hastings-Raydist, Inc., Hampton, Va.
Airmover—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.
Air Mover—Exhausters. Mine Safety Appliances Co., Pittsburgh, Pa.
Airmpeler—Fans, fan exhauster units, ventilalators. Ammerman Co., Inc., Stillwater, Minn.
Airocool—Burners. National Airoil Burner Co., Inc., Philadelphia, Pa.
Airo-Flex—Registers. Auer Register Co., Cleveland, O.
Airoil—Oil burners. National Airoil Burner Co., Inc., Philadelphia, Pa.
Air-O-Matic—Unitary air conditioners. Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.
Airotor—Blower wheels. Torrington Mfg. Co., Torrington, Conn.
Air-Out—Vents. Accurate Sheet Metal & Mfg. Works, Inc., Chicago, Ill.
Airovent—Gas Burners. National Airoil Burner Co., Inc., Philadelphia, Pa.
Airpak—Filters. Conoflow Corp., Subsidiary of Walworth Co., Philadelphia.
Airphlo—Roof ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.

Airphlo Vent—Roof ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.
Air Prover—Regulators. Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.
Air Purger—Air eliminators. American Tube & Controls, Inc., West Warwick, R. I.
Air Rad—Radiation. Penn Boiler Div., Pebbco Industries, Inc., Lancaster, Pa.
Airsan—Filters. Air Filter Corp., Milwaukee.
Air-Scoop—Eliminators, air separators. Taco Heaters, Inc., Cranston, R. I
Air Seal—Valves. Barksdale Valves, Los Angeles, Calif.
Airstat—Regulators. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Airswitch—Thermostats, regulators. Minneapolis-Honeywell Regulator Co., Minneapolis.
Air-Tite—Adhesive duct tape. Elgen Mfg. Co., Long Island City, N. Y.
Airtrol—Air eliminators. Bell & Gossett Co., Morton Grove, Ill.
Airtron—Ducts and duct fittings, hose. Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Air-Tumbler—Dust collectors. Dust Suppression & Engineering Co., Lake Orion, Mich.
Air-Van—Ventilators, exhausters, fans. Gallaher Co., The, Omaha, Neb.
Airvector—Refrigerating condensers. Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Airwave—Propeller fans, ventilators. Romla Co., Los Angeles, Calif.
Air-X-it—Roof ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.
Airxpel—Traps. Wright-Austin Co., Detroit.
Airxpeler—Roof ventilators, dampers, fittings, hose, exhausters, fans, panels and doors, fan exhauster units, wall ventilators, vents, louvers and shutters, vent flue caps. Ammerman Co., Inc., Stillwater, Minn.
Ajusto-Spede—Speed changers. Allis Co., Louis, Milwaukee, Wis.
Akon—Water treatment. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Aktiv—Cleaning compounds. Turco Products, Inc., Wilmington, Calif.
Alaka—Protective coatings, enamels and lacquers. Alfred Hague & Co., Inc., Div. of Lacquer & Chemical Corp., Brooklyn, N. Y
Alaskan—Unitary air conditioners. Steam-O-Matic Corp., Sedalia, Mo.
Alathon—Plastics, powders and resins. du Pont de Nemours & Co., Inc., E. I., Polychemicals, Dept., Wilmington, Del.
Alchemik—Enamels and lacquers. Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich.
Alcoa—Angles, compounds, rods, dehydrators, exchangers, pipe, sheets, tanks, tubing. Aluminum Co. of America, Pittsburgh, Pa.
Alcorjac—Pipe covering protectors. Insul-Coustic, Inc., Maspeth, L. I., N. Y.
Alcotwin—Exchangers. Alco Products, Inc., Schenectady, N. Y.
Alcuplate—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Alexall—Industrial adhesive tape. Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Alfol—Insulation. Reflectal Corp., Subsid., Borg-Warner Corp., Chicago, Ill.
Algaecide—Water treatment. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Algaecide—Water treatment. Anderson Chemical Co., Inc., Macon, Ga.
Algicide—Water treatment. North American Mogul Products Co., The, Cleveland, O.
Algiton—Chemical and water treatment. Sci-eff-ec Labs., Chagrin Falls, O.
Align E-Z—Pipe nipples. Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Aliron—Sheets, clad. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Alkaline—Compounds. Turco Products, Inc., Wilmington, Calif.
Alkasteem—Water treatment. Anderson Chemical Co., Inc., Macon, Ga.
Alkyd—Protective coatings. Watson-Standard Co., Pittsburgh, Pa.
All-Chem—Rotary pumps. Eco Engineering Co., Newark, N. J.
Allen—Benders. Steel City Electric Co., Pittsburgh, Pa.
Allencote—Refractories and refractory cement. Allen Co., Robert G., Mechanicsville, N. Y.
Allenite—Soot destroyers. Allen Co., Robert G., Mechanicsville, N. Y.
Allflex—Flexible metal hose and fittings, flexible metal tubing. Allied Metal Hose Co., Long Island City, N. Y.
All-In-One—Regulators. Bell & Gossett Co., Morton Grove, Ill.
Allispede—Speed changers. Allis Co., Louis, Milwaukee, Wis.
All-Motor—Gear-motors. Falk Corp., Milwaukee, Wis.
Allmul—Refractories and refractory cement. Babcock & Wilcox Co., Boiler Div., Barberton, O.
Allprene—Gaskets. Chicago Gasket Co., Chicago, Ill.
Allspeed Selector—Mechanical changers. Worthington Corp., East Orange, N. J.
All-Tite Vane Runner—Vanes. Elgen Mfg. Corp., Long Island City, N. Y.
Alnifer—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Alodine—Protective coatings. Amchem Products, Inc., Ambler, Pa.
Aloyco—Gages, valves. Alloy Steel Products Co., Linden, N. J.
Alpine—Unitary air conditioners. International Metal Products Co., Phoenix, Ariz.
Alsiplate—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Alternarc—Arc welders. Electric Arc, Inc., Newark, N. J.
Alumalung—Roof ventilators. Iron Lung Ventilator Co., Cleveland, O.
Alumend—Arc welding electrodes. Arcos Corp., Philadelphia, Pa.
Alumilux—Heaters. Clayton & Lambert Mfg. Co., Louisville Ky.
ALUMINIZED STEEL—Sheets, aluminum coated. Armco Steel Corp., Middletown, O.
Aluminum—Roof ventilators. Iron Lung Ventilator Co., Cleveland, O.
Aluminweld—Electrodes. Lincoln Electric Co., Cleveland, O.
Alumnaweld—Solder and fluxes. Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
A-Lum-O-Aire—Filters. Carey Electronic Engineering Co., Metal Wool Div., Springfield, O.
Alundum—Cement, protective coatings, grinders and grinding wheels, refractories and refractory cement. Norton Co., Worcester, Mass.
AluTin—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.
Amballoy—Sheets. Byers Co., A.M., Pittsburgh, Pa.
Amblerex #2—Insulating cement. Keasbey & Mattison Co., Ambler, Pa.
Amchem—Isotopes. American Gas & Chemicals, Inc., Leak-Tec Div., New York, N. Y.
Amco—Protective coatings, welding compounds, solder. American Solder & Flux Co., Philadelphia, Pa.
Amco—Pumps, unitary air conditioners. American Comfort Mfg. Co., Evanston, Ill.
Amco—Humidifiers, nozzles, psychrometers. Grinnell Co., Inc., Providence, R.I.
Amco—Control Systems, humidifiers, hygrometers, indicators, meters, nozzles, unitary air conditioners, psychrometers, valves. American Moistening Co., Cleveland, N. C.
Am-Duct—Ducts and duct fittings. American Vitrified Products Co., Cleveland, O.
Amer-Clone—Collectors. American Air Filter Co., Inc., Louisville, Ky.
Amer-glas—Unit filters. American Air Filter Co., Inc., Louisville, Ky
American—Recorders, manometers, regulators, thermometers, transmitters, wells. Manning, Maxwell & Moore, Inc., Stratford, Conn.
American—Meters. Buffalo Meter Co., Inc., Buffalo, N. Y.
American—Heater. Hotstream Heater Co., Cleveland, O
American AC—Air filters. American Air Filter Co., Inc., Louisville, Ky.
American Hammered—Rings. Koppers Company, Inc., Metal Products Div., Baltimore.
American H/V—Unit Filters. American Air Filter Co., Inc., Louisville, Ky.
American MW—Air filters. American Air Filter Co., Inc., Louisville, Ky.
American-Microsen — Transmitters. Manning, Maxwell & Moore, Inc., Stratford, Conn.
Amerigear—Couplings. Zurn Industries, Inc., Erie, Pa.
Amerjet—Collectors. American Air Filter Co., Inc., Louisville, Ky.
Amer-Kool—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Amer-Plate—Tank linings. Amercoat Corp., South Gate, Calif.
Amervent—Unit ventilators. Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Amesteam—Boilers. Ames Iron Works, Inc., Oswego, N. Y.
Aminco—Colorimeters, gage testers, indicator-controllers, indicators, pumps, recorders, regulators, recorder-controllers, relays, viscosimeters. American Instrument Co., Inc., Silver Spring, Md.
Ammonoduct—Pipe. Bethlehem Steel Co., Bethlehem, Pa.
Ampco—Masonry drills. Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.
Ampcoflex—Pipe fittings, fume disposal hoods, plastic valves, tanks, ducts and duct fittings, plastic pipe, plastic sheets. Atlas Mineral Products Co., Mertztown, Pa.
Ampcolite—Plastic pipe. Atlas Mineral Products Co., Mertztown, Pa.
Am-Pe-Co—Centrifugal fans. American Machine Products Co., Marshalltown, Ia.
Amp-Quartz—Heaters, electric heating panels, baseboard radiation. Ampere Industries, Newark, N.J.
Amprobe—Ammeters and voltmeters. Pyramid Instrument Corp., Lynbrook, Long Island, N.Y.
Amvent—Ventilators. Western Engineering & Mfg. Co., Los Angeles, Calif.
Anco—Water treatment. Anderson Chemical Co., Inc., Macon, Ga.
Anco Scale Remover—Compounds, scale removal, treatment. Anderson Chemical Co., Inc., Macon, Ga.
Anders-Driline—Dehumidifiers. Desomatic Products Div., Atlantic Research Corp., Falls Church, Va.
Andrite—Dehydrators. Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Anemotherm—Direct reading meters. Anemostat Corp. of America, New York, N. Y.
Ankorite—Packing. Anchor Packing Co., Philadelphia, Pa.
Anthratube—Boilers. Axeman-Anderson Co., Williamsport, Pa.
Anti-Capillary Compounds—Compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.
Anti Drip—Vapor barriers. Zippertubing Co., The, Los Angeles, Calif.
Anti-Spatter—Welding compounds. Thompson and Co., Oakmont, Pa.
Anti-Spatter—Welding compounds. Kote Co., Inc., Sheboygan, Wis.
Apco—Protective coatings. Adhesive Products Corp., New York, N. Y.
Apco—Turbine type pumps, systems. Aurora Pump Div., The New York Air Brake Co., Aurora, Ill.
Apeco—Blueprint machines. American Photocopy Equipment Co., Chicago, Ill.
Apex—Analyzers, recorders, indicators. Uehling Instrument Co., Paterson, N. J.
Apexior—Coatings. Dampney Co., Boston.
Appco—Fume washers. Argo Plastic Products, Cleveland, O.
Aprilaire—Humidifiers. Research Products Corp., Madison, Wis.
Apsco—Switches, nozzles. April Showers Div., Swartwout Fabricators, Inc., Kokomo, Ind.
Apthorp—Nozzles. Boston Machine Works, Inc., Lynn, Mass.
Aqua-Clear—Water treatment. Sudbury Laboratory, South Sudbury, Mass.
AquaCooler—Towers, cooling. The Marley Co., Kansas City, Mo.
Aqua-Cushion—Absorbers. Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Aqualene—Water treatment. Lester Laboratories, Inc., Atlanta, Ga.
Aqua-Line—Pumps. Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Aqua-Line—Radiation. York-Shipley, Inc. York Pa
Aqua-Pure—Filters. Cuno Engineering Corp. Meriden, Conn.
Aqua-Saver—Cooling towers. Peerless Products Div., United Cooling Towers, Inc., N Little Rock, Ark.
Aquastat—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Aqua-Tite—Seals. Schwitzer Corp., Indianapolis, Ind
Aquatone—Treatment, compounds, steam and water. Ampion Corp., Long Island City N. Y.
Aquatower—Cooling towers. Marley Co. The, Kansas City, Mo.
Aqulux—Water heaters. Johnson Co., S. T. Oakland, Calif.
Arcaloy—Electrodes. Alloy Rods Co., York Pa.
Arc-Eng—Registers. Register & Grille Mfg Co., Inc., Brooklyn, N. Y.
Arco—Radiation. American-Standard Plumbing and Heating Div., New York, N. Y
Arcoglas—Heaters. American-Standard Plumbing & Heating Div., New York, N Y.
Arco Sil—Hose, ducts and duct fittings Arrowhead Products Div., of Federal-Mogul-Bower Bearings, Inc., Long Beach, Calif.
Arcosteel—Heaters. American-Standard Plumbing & Heating Div., New York.
Arctic Circle—Unitary air conditioners. International Metal Products Co., Phoenix, Ariz.
Arid Air—Dehumidifiers. Tamms Industries Co., Chicago, Ill.
Arin—Louvers and shutters, dampers. Arex Co., Chicago, Ill.
Aristocrat 400—Air diffusers, grilles, registers. AirGuide Plastics Corp., Miami Fla.
Arkon—Meters. McIntosh Equipment Corp., New York, N. Y.
Armacs—Treatment. Armour Industrial Chemical Co., Div. of Armour & Co., Chicago, Ill.
Armaflex—Insulation, pipe and tubing. Armstrong Cork Co., Lancaster, Pa.
Armaglas—Insulation. Armstrong Cork Co., Lancaster, Pa.
Armalite—Insulation. Armstrong Cork Co., Lancaster, Pa.
Armaloy—Wrenches. Armstrong Bros. Tool Co., Chicago, Ill.
Armatemp—Insulating cement. Armstrong Cork Co., Lancaster, Pa.

Ar-Met—Meters. Brooks Instrument Co., Inc., Hatfield, Pa.
Armolads—Treatment. Armour Industrial Chemical Co., Div. of Armour & Co., Chicago, Ill.
Armored Anode—Electrolytic devices. Patrol Valve Co., The, Cleveland, O.
Armox—Pipe cutting oil. Armour Industrial Chemical Co., Div. of Armour & Co., Chicago, Ill.
Aroclor—Heat transfer oil. Monsanto Chemical Co., St. Louis, Mo.
Arquads—Treatment. Armour Industrial Chemical Co., Div. of Armour & Co., Chicago, Ill.
Arrowflow—Valves. General-American Valve Co., Corona Del Mar, Calif.
Arrowtrol—Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Art—Direct radiation, hangers or brackets. National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Artic—Refrigerant. E. I. du Pont de Nemours & Co., Electrochemical Dept., Wilmington, Del.
Asbestocel—Boiler, tank & pipe insulation. Johns-Manville Corp., New York, N. Y.
Asbestolux—Insulation. North American Asbestos Corp., Chicago, Ill.
Asbeston—Insulation. United States Rubber Co., New York, N.Y.
Asco—Valves, filters, relays, solenoid and solenoid cells, strainers, switches, panel and control boards. Automatic Switch Co., Florham Park, N. J.
Ascovector—Radiation. Ascot Gas Water Heaters, Inc., Milwaukee, Wis.
Ashcroft—Gages, cocks, indicator-controllers, recorders, switches, testers, transmitters. Manning, Maxwell & Moore, Inc., Stratford, Conn.
Ashvac—Coal and ash conveyors. The Allen-Sherman-Hoff Co., Wynnewood, Pa.
Astec—Asbestos packing. Gatke Corp., Chicago, Ill.
At-a-Glance—Gages. Krueger Sentry Gauge Co., Green Bay, Wis.
Atcotran—Indicator-controllers, indicators, recorder-controllers, recorders. Automatic Timing & Controls, Inc., King of Prussia, Pa.
Atcotrol—Switches. Automatic Timing & Controls, Inc., King of Prussia, Pa.
Atlas—Adhesives. Flintkote Co., The, New York, N. Y.
Atlas—Boilers. Titusville Iron Wks. Co., The, Titusville, Pa.
Atlas—Diffusers, grilles, registers. J. B. Smith Co., Philadelphia, Pa.
Atlas—Fans, furnaces, heaters, unitary air conditioners, ventilators. Tuck-Aire Furnace Co., San Francisco, Calif.
Atlastaflex—Tank linings. Atlas Mineral Products Co., Mertztown, Pa.
Atlastaply—Tank linings. Atlas Mineral Products Co., Mertztown, Pa.
Atlastavon—Tank linings, tanks. Atlas Mineral Products Co., Mertztown, Pa.
Atlastic 77—Cement and compounds. Atlas Mineral Products Co., Mertztown, Pa.
Atlastiseal—Tank linings. Atlas Mineral Products Co., Mertztown, Pa.
Atmo-Spray—Refrigerating condensers. Watkins Co., J.E., Maywood, Ill.
Atmos—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N.Y.
Atmos-Pak—Unitary air conditioners. Air Conditioning, Inc., Ossining, N. Y.
Atmos-Therm—Condensers. Rempe Co., Chicago, Ill.
Atom-Arc—Electrodes. Alloy Rods Co., York, Pa.
Atometer—Meters. American Moistening Co., Cleveland, N.C.
Atomick—Humidifiers, nozzles. Maid-O'-Mist, Inc., Chicago, Ill.
Attic-Air—Propeller fans. Acme Engineering & Mfg. Corp., Muskogee, Okla.
Audigage—Ultrasonic testing equipment. Branson Instruments, Inc., Stamford, Conn.
Audivent—Unit ventilators. Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Austoscale—Treatment. Acme Chemical Co., Milwaukee, Wis.
Auto-Airman—Air filters. American Air Filter Co., Inc., Louisville, Ky.
AutoChemic—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N.Y.
Autodraft—Fans. Tjernlund Mfg. Co., St. Paul, Minn.
Auto-Jr—Valves. Beacon Brass Co., Waltham, Mass.
Auto-Klean—Filters, strainers. Cuno Engineering Corp., Meriden, Conn.
Autolube—Bearings. International Powder Metallurgy, Inc., Ridgway, Pa.
Automaze—Filters. Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland.
Auto-Stat—Blue and white print machines. American Photocopy Equipment Co., Chicago, Ill.
Auto-Vent—Eliminators, humidifiers, valves. Maid-O'-Mist, Inc., Chicago, Ill.
Aveco—Valves. Associated Valve Co., North Wales, Pa.
Avisco—Fibers for air filters. American Viscose Corp., New York, N.Y.
Axiflo—Fans. Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Axivane—Blowers, and fans. Joy Mfg. Co., Pittsburgh, Pa.

B.A.C.—Condensers, oil coolers, cooling towers. Baltimore Aircoil Co., Inc., Baltimore, Md.
B. B.—Blast gates. Berger Bros. Co., Philadelphia, Pa
B.B. Corkboard—Insulation. United Cork Companies, Kearney, N. J.
BBT—Steam system treatment. Bruner Corp., Milwaukee, Wis.
B & C—Plates, fittings, valves, unions. Beaton & Corbin Mfg. Co., Southington, Conn.
BCA—Bearings. Bearings Co. of America, Div. of Federal Mogul Bower Bearings, Inc., Lancaster, Pa.
B. & G.—Air eliminators, circulators, condensers, fittings, heat exchangers, heaters, heating systems, superheaters, temperature regulators, tanks, valves. Bell & Gossett Co., Morton Grove, Ill.
B-H—Insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.
B-H No. 1—Insulation, insulating cement. Baldwin-Ehret-Hill, Inc., Trenton, N. J.
B-H Mono-Kover—Insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.
B & J—Orifices, pumps, strainers, systems, traps, valves. Barnes & Jones, Inc., Newtonville, Mass.
B & K—Pipe cutting and threading machines. Bignall & Keeler Div., John Ramming Machine Co., St. Louis, Mo.
B.O.—Cocks, joints, valves. Bordo Co., Inc., L. J., Glenside, Pa.
B & P Enamel—Enamels and lacquers. Tropical Paint Co., Cleveland, O.
BV—Couplings. Dahl Co., Inc., G. W., Bristol, R. I.
B & W—Boilers, burners, desuperheaters, fuel economizers, refractories, stokers, superheaters. Babcock & Wilcox Co., Boiler Div., Barberton, O.
B & W—Pipe fittings, flanges, tubes and tubing. Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bacite—Insulation, insulating cement. Bird-Archer Co., Philadelphia, Pa.
Baco—Soot destroyer, pumps. Bird-Archer Co., Philadelphia, Pa.
Badger—Time switches. Reliance Automatic Lighting Co., Racine, Wis.
Baflex—Enamels and lacquers, protective coatings. Interchemical Corp., Finishes Div., Newark, N. J.
Bakelite—Plastics, powders and resins. Union Carbide Plastics Co., Div. of Union Carbide Corp., New York, N.Y.
Balance-Flow—Pumps. Goulds Pumps, Inc., Seneca Falls, N. Y.
Balance-trol—Heating systems. Automatic Timing & Controls, Inc., King of Prussia, Pa.
BalanSeal—Valves. Farris Engineering Corp., Palisades Park, N. J.
Ball-Lok—Drives. V-Belt Clutch Co., Los Angeles, Calif.
Ball-O-Matic—Regulators. Elgen Mfg. Co., Long Island City, N. Y.
Ball-O-Matic—Water softeners. Reynolds Water Conditioning Co., Detroit, Mich.
Ball-Rite—Drills. Cummins Portable Tools, Div. of John Oster Mfg. Co., Milwaukee, Wis.
Balsam-Wool—Insulation. Wood Conversion Co., St. Paul, Minn.
Baltograph—Machines and film, X-ray. Balteau Electric Corp., Stamford, Conn.
Baltospot—Machines and film, X-ray. Balteau Electric Corp., Stamford, Conn.
Baltranite—Combustion chambers. Shenango Refractories, New Castle, Pa.
Bankheat—Burners. Johnson Co., S. T., Oakland, Calif.
Banroc—Pipe insulation. Johns-Manville Corp., New York, N. Y.
Bantam—Valves. Dahl Co., Inc., G. W., Bristol, R. I.
Bantam—Stud welders. KSM Products, Inc., Moorestown, N. J.
Bardex—Hose. Newage Industries, Inc., Jenkintown, Pa.
Barnes—Cutters. Armstrong Bros. Tool Co., Chicago, Ill.
Barnes—Cutters. Erie Tool Works, Erie, Pa.
Bar-O-X—Protective coatings. Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich.
Bar-Rust—Protective coatings for metals. Midland Industrial Div., The Harrison Paint & Varnish Co., Canton, O.
Basa Hammers—Tools. Greene, Tweed & Co., North Wales, Pa.
Basaltwool—Insulation. Thermo-Sound Products, Div. of Kittell-Lacy, Inc., El Monte, Calif.
Base Ray—Baseboard radiation. Burnham Corp., Irvington, N. Y.
Base Slide—Pipe joints. American Tube & Controls, Inc., West Warwick, R. I.
Basevector—Fin tube radiation. Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.
Basic magnesite—Refractories and refractory cement. Basic Inc., Cleveland, O.
Basifrit—Refractories and refractory cement. Basic Inc., Cleveland, O.
Basifmix—Refractories and refractory cement. Basic, Inc., Cleveland, O.
Basipatch—Refractories and refractory cement. Basic Inc., Cleveland, O.
Basmor—Heaters, boilers. Bastian-Morley Co., Inc., LaPorte, Ind.
Basoid—Valves. Baso Inc., Milwaukee, Wis.
Basotron—Valves. Baso Inc., Milwaukee, Wis.
Bayce-Heet—Radiation. Brown Products Corp., Union, N. J.
Bay State—Packing. Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Bear-Cat—Tape. Norton Co., Worcester, Mass.
Beauty Base—Baseboard radiation. Continental Mfg. Co., Baltimore, Md.
Beco—Boards, control systems, controllers and starters, relays, switches, tags, thermostat guards. Better Engineered Controls, Los Angeles, Calif.
Belknap—Valves. American-Standard Controls Div., Detroit, Mich.
Bell-Ex—Ventilators. New York Blower Co., Chicago, Ill.
Bell-Pack—Clamps. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Bell-Tite—Cast Iron pipe. Clow & Sons, Inc., James B., Chicago, Ill.
Beloit—Machines, punches, power shears. Hendley & Whittemore Co., Beloit, Wis.
Bensair—Fans. Benson Mfg. Co., Kansas City, Mo.
Bermico—Fiber glass, pipe fittings. Brown Co., Boston, Mass.
Bermico 50—Plastic pipe. Brown Co., Boston, Mass.
Bestfelt "Lamino Sponge"—Insulation. Keasbey & Mattison Co., Ambler, Pa.
Bestoil—Pipe oil. Oster Mfg. Co., Wickliffe, O.
Beth-Co-Weld—Pipe. Bethlehem Steel Co., Bethlehem, Pa.
Beth-Cu-Loy—Sheets. Bethlehem Steel Co., Bethlehem, Pa.
Bev-Aire—Unit coolers. Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Bi-Air—Burners. John Zink Co., Tulsa.
Bifurcator—Fans. DeBothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.
Big Chief—Refractories and refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Bildrite—Insulation. Minnesota & Ontario Paper Co., Insulite Div., Minneapolis, Minn.
Biltin—Heaters. Taco Heaters, Inc., Cranston, R. I.
Bilton—Pumps. Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Angeles, Calif.
Bi-Metalic—Thermometers. Taylor Instrument Companies, Rochester, N.Y.
Bi-Mix—Burners. John Zink Co., Tulsa, Okla.
Binoc—Thermometers. Taylor Instrument Companies, Rochester, N. Y.
Bitoxy—Protective coatings for metals. Adams Chemical Corp., El Segundo, Calif.
Bitumastic—Protective coatings, enamel and lacquers, high temperature paint. Koppers Co., Inc., Pittsburgh, Pa.
Bituplastic—Coatings. Koppers Co., Inc., Pittsburgh, Pa.
Black Baking Japans—Enamels and lacquers. Hilo Varnish Co., Div. of Carpenter-Morton Co., Everett, Mass.
Blacozene—Water treatment. Black & White Chemical Co., New York, N. Y.
Blade Kit—Louvers and shutters. Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Blakite—Cement. Johns-Manville Corp., New York, N. Y.
Blastaire—Fans, and blower wheels. Revcor Inc., Carpentersville, Ill.
Blazecrete—Refractories. Johns-Manville Corp., New York, N. Y.
Blaze Pruf Silverlume—Paint. Wilbur & Williams Co., Norwood, Mass.
Blend-Air—Ducts and duct fittings. Coleman Co., Inc., The, Wichita, Kans.
Blenders—Diffusers. Coleman Co., Inc., The, Wichita, Kans.
Blessing—Pumps, pump-motor units. Wire Products Co., Baltimore, Md.
Bloapco—Dust collectors. Blower Application Co., Milwaukee, Wis.

Blokstik—Adhesives for insulation other than pipe. Forty-Eight Insulations, Inc., Aurora, Ill.

Bloomer—Cooling towers. Fiske Co., Chicago, Ill.

Blu-Cold—Compressors. Lehigh Mfg. Co., Div. of Lehigh Inc., Easton, Pa.

Blu-Flame—Burners, heaters. Vacuum Gas Burner Co., Olean, N. Y.

Blue-Bantam—Valves. Henry Valve Co., Melrose Park, Ill.

Blue Circle—Heating boilers. Dunkirk Radiator Corp., Dunkirk, N. Y.

Blue Cross—Duct tape. Industrial Tape Div., Hampton Mfg. Co., New Rochelle, N.Y.

Blue Dot—Benders. Imperial-Eastman Corp., Chicago, Ill.

Blue Flag—Pipe wrap. Johns-Manville Corp., New York, N. Y.

Blue-Line—Burners. Gordon & Piatt, Inc., Winfield, Kans.

Blue-Point—Cutters, threading die chasers, drills. Snap-on Tools Corp., Kenosha, Wis.

Blue Ribbon—Headers and nipples. Chicago Nipple Mfg. Co., Oak Park, Ill.

Blue Streak—Dehydrators. Wabash Corp., Chicago, Ill.

Boardman—Pump governors. Locke Regulator Co., Salem, Mass.

Boilergard—Low water cut-offs. Maid-O'-Mist, Inc., Chicago, Ill.

Boiler-Lax—Cleaning compounds, chemical treatment. Radiator Specialty Co., Charlotte, N. C.

Boiler Solder Seal—Compounds. Radiator Specialty Co., Charlotte, N. C.

Boltaron—Plastic sheets for ducts and hoods. Bolta Products, A Div. of General Tire & Rubber Co., Lawrence, Mass.

Bondmaster—Adhesives. Rubber & Asbestos Corp., Bloomfield, N. J.

Bondstrand—Plastic pipe. Amercoat Corp., South Gate, Calif.

Bondwich—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.

Bonnie Scot—Boilers. National-U. S. Radiator Div., Crane Co., Johnstown, Pa.

Booster—Units, fuel oil. Cleaver-Brooks Co., Milwaukee, Wis.

Borgana—Compounds, treatments. Strong, Carlisle & Hammond, Conneaut, O.

Bosco—Clay pipe. Bowerston Shale Co., The, Bowerston, O.

Box-Fin—Baseboard radiation. Edwards Engineering Corp., Pompton Plains, N.J.

Bradco—Pipe fittings; flanges. Bradshaw Steel & Forge Co., Panama City, Fla.

Branford—Unions. Malleable Iron Fittings Co Branford Conn

Brassweld—Compounds. Rexarc, Inc., West Alexandria, O.

Braxon—Compounds, scale removal, water treatment. Anderson Chemical Co., Inc., Macon Ga

Brazaloy Fluxes—Solder. All-State Welding Alloys Co., Inc White Plains, N Y

Brazo—Solder. Linde Co., Div. of Union Carbide Corp., New York, N. Y.

Brazolets—Fittings. Bonney Forge & Tool Wks Allentown, Pa.

Breeze—Adsorbers. Barnebey-Cheney Co., Columbus, O

Breeze Master—Fans. Acme Engineering & Mfg. Corp., Muskogee, Okla.

Breezo—Fans. Buffalo Forge Co., Buffalo, N Y

Breezy-Air—Unitary air conditioners. Barwick Mfg. Corp., Wichita, Kan.

Brilliant Fire—Heaters. Ohio Foundry & Mfg. Co , Steubenville, O

Brite Kote—Valves, elbows and tees. Hammond Valve Corp., Hammond, Ind.

Bronco—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.

Bronze-Arc C—Electrodes. Alloy Rods Co., York, Pa.

Bronze-Chem—Rotary pumps. Eco Engineering Co Newark N. J.

Bronzeweld—Compounds. Rexarc, Inc., West Alexandria, O.

Bronzochrom—Gas welding rod. Eutectic Welding Alloys Corp., Flushing, N. Y.

Bru-cex—Water treatment. Bruner Corp., Milwaukee, Wis.

Brule—Incinerators. Goder, Inc., Joseph, Chicago, Ill.

Bubbltrol—Regulators. Automatic Control Co., St. Paul, Minn.

Bulator—Grilles. Hendrick Mfg. Co., Carbondale, Pa.

Bulk-Flo—Conveyors. Link-Belt Co., Chicago.

Bulldog—Shears and snips. Wiss & Sons Co., J., Newark, N.J.

Bull Dog—Refrigerant dehydrators. Refrigeration Research, Inc., Brighton, Mich.

Bull Dog—Stocks and dies. Oster Mfg. Co., Wickliffe, O.

Bull Dog—Belting, tape. Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.

Bull's Eye—Glasses. Fischer & Porter Co., Warminster, Pa.

Bullet—Filters. Sealed Unit Parts Co., Inc., New York, N. Y.

BunaN—Plastic pipe. Vanton Pump & Equipment Corp., Hillside, N. J.

Burdco—Blades, fans. Burden Co., Alan E., Los Angeles, Calif.

Burkay—Heaters. Smith Corp., A. O., Permaglas Div., Kankakee, Ill.

Burks—Pumps. Decatur Pump Co., Decatur, Ill.

Buster—Shears and snips. Lidseen of North Carolina, Inc., Hayesville, N. C.

CBC-Series—Cooling towers. Havens Cooling Tower Div. of Havens Structural Steel Co., Kansas City, Mo.

C-E—Boilers, stokers, fuel economizers. Combustion Engineering, Inc., New York.

C-E Heatmaster—Unitary air conditioners. Combustion Engineering, Inc., New York.

C-E Controlled Circulation—Heating systems. Combustion Engineering, Inc., New York, N. Y.

C-E Raymond—Air separators. Combustion Engineering, Inc., New York, N. Y.

C-E Spreader—Stokers. Combustion Engineering. Inc., New York, N. Y.

C-H—Alarms, blocks, control systems, pilot and signal lights, solenoid and solenoid coils, controllers and starters, heaters, relays, regulators, switches, operators. Cutler-Hammer, Inc., Milwaukee, Wis.

CH—Heaters. McQuay, Inc., Minneapolis.

C & L—Heaters, torches. Clayton & Lambert Mfg. Co., Louisville, Ky.

CM Puller—Hoists. Chisholm-Moore Hoist Div., Columbus McKinnon Corp., Tonawanda, N. Y.

CMC Aluminum—Enamels and lacquers. Acorn Refining Co., Cleveland, O.

CP—Aftercoolers, clamps, compressors, engines, electric motors, expanders, grinders and grinding wheels, hoists, machines, pumps, tools. Chicago Pneumatic Tool Co., New York, N. Y.

C.P.C.—Hose and tubing clamps, plastic pipe flanges, belting, plastic pipe nipples. Commercial Plastic Co., Chicago, Ill.

C & R—Regulators. Automatic Control Co., St. Paul, Minn.

CS—Unitary air conditioners. Young Radiator Co., Racine, Wis.

C.V.—Plastic pipe. Mueller Brass Co., Port Huron, Mich.

CW—Pipe. Tubular Div., The National Supply Co., Pittsburgh, Pa.

CWF—Chillers. Taco Heaters, Inc., Cranston, R. I.

Cablestat—Cable. Wiegand Co., Edwin L., Pittsburgh, Pa.

Cadco—Plastic sheets for ducts and hoods, plastic tubing. Dayco Corp., Dayton, O.

Cadillac—Portable hoists. Aluminum Products, Inc., Fort Lauderdale, Fla.

Cadillac—Meters. Central Station Steam Co., Detroit, Mich.

Cafco—Insulation cement. United States Mineral Wool Co, Stanhope, N. J.

Calco—Valves. California Brass Mfg. Co., Los Angeles, Calif.

Cal-Fin—Pipe, tubing, radiation. Drayer-Hanson Div., Crane Co., Los Angeles, Calif.

Califlo—Valves. Watkins Co., J. E., Maywood, Ill.

Calktite—Cement and compounds. United States Stoneware Co., New York, N. Y.

Calol—Protective coatings. Standard Oil Co. of California, San Francisco, Calif.

Calorex—Oil burners, fuel oil preheaters, fuel oil units. W. N. Best Combustion Equipment Co., Inc., Little Ferry, N. J.

Calorimeter Comparator—Btu meters. Liaison Engineering Services, Garland, Tex.

Caltemp—Insulation, insulating cement. Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif.

Camomatic—Valves. Belco Industrial Equipment Div., Bogue Electric Mfg. Co., Paterson, N. J.

Campco—Plastic sheets for ducts and hoods. Chicago Molded Products Corp., Chicago, Ill.

Capillary—Air washers. Clarage Fan Co., Kalamazoo, Mich.

Capillary—Air washers, humidifiers, cooling towers, unitary air conditioners. Air & Refrigeration Corp., New York, N. Y.

Capitolaire—Furnaces, compressors, water chillers, refrigerating condensers, radiation, unitary air conditioners. National-U. S. Radiator Div., Crane Co., Johnstown, Pa.

Caposil—Cement, insulation. North American Asbestos Corp., Chicago, Ill.

Caposite—Cement, insulation. North American Asbestos Corp., Chicago, Ill.

Carbolite—Soot destroyers. Ampion Corp., Long Island City, N. Y.

Carbozite—Coatings. Ohmlac Paint & Refining Co., Long Island City, N. Y.

Cassel—Templates. Graphic Indicator Co., Los Angeles, Calif.

Castalu—Fans, wheels. R & R Metal Products, Inc., Chicago, Ill.

Cast-Refract—Refractories. Quigley Co., Inc., New York, N. Y.

Catalyte—Soot destroyers. Sci-eff-ec Labs., Chagrin Falls, O.

Catch-All—Dehydrators and filters. Sporlan Valve Co., St. Louis, Mo.

Cathochem—Water treatment. Electro Rust-Proofing Corp., Belleville, N. J.

Causul—Valves. Lunkenheimer Co., Cincinnati, O.

CC Coatings—Protective coatings, paint. Chemical Solvent Co., Birmingham, Ala.

Cell-Tite—Pipe and tubing insulation. Silvercote Products, Inc., Chicago, Ill.

Cemcoat—Enamels and lacquers. Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.

Cementseal—Enamels and lacquers. Acorn Refining Co., Cleveland, O.

CenTraVac—Compressors. Trane Co., The, La Crosse, Wis.

Centri-Chem—Centrifugal pumps. Eco Engineering Co., Newark, N. J.

Centriflo—Pumps. Hartell, Inc., Warminster, Pa.

Centrilator—Roof ventilators. Clarage Fan Co., Kalamazoo, Mich.

Centriline—Fans. Westinghouse Electric Corp., Sturtevant Div., Hyde Park, Boston, Mass.

Centripac—Packing. Johns-Manville Corp., New York, N. Y.

Centripeller—Roof ventilators. Jordan & Co., Inc., Paul R., Indianapolis, Ind.

Centri-Vent—Roof ventilators. Midwest Air-moving Corp., Willoughby, O.

Century—Boilers. Smith Co., Inc., H. B., The, Westfield, Mass.

Ceramiduct—Ducts and duct fittings. Straitsville Brick Co., New Straitsville, O.

Cert-a-bar—Conduits. U-Con Co., Annapolis, Md.

Certified Climate—Unitary air conditioners, washers. Parks-Cramer Co., Fitchburg, Mass.

Cesco—Fittings. Columbia Engineering Service Co., Santa Rosa, Calif.

C-Flux—Solder and fluxes. American Solder & Flux Co., Philadelphia, Pa.

Chamfer Trade—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.

Champ—Non-metal hose. Hose Accessories Co., Philadelphia, Pa.

Champion—Furnaces, heaters. National Heater Co., Inc St. Paul, Minn.

Champion—Gas fired heaters. Bastian-Morley Co., Inc., LaPorte, Ind.

Champion—Pumps. Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.

Chan-Ail—Pipe storage racks. The Modern Hanger Corp., Cleveland, O.

Channellock—Tools. Champion-DeArment Tool Co., Meadville, Pa.

Charg-A-Can—Refrigerants. American Potash & Chemical Corp., Aerosol & Refrigeration Div., Los Angeles, Calif.

Chemfast—Protective coatings for metals. Truscon Laboratories Div., Devoe & Reynolds Co., Inc., Detroit, Mich.

Chemicator—Chemical feeders. Erlen Products Co., Burbank, Calif.

Chemiseal—Pipe couplings, mechanical shaft seals. Garlock, Inc., Palmyra, N. Y.

Chemiseal—Seals, gaskets, joints, protective coatings. packing, couplings. shaft United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J.

Chem-O-Feeder—Feeders, pumps, water treatment. B-I-F Industries, Proportioneers Div., Providence, R. I.

Chem-O-Shot—Pumps. B-I-F Industries, Proportioneers Div., Providence, R. I.

Chempac—Gaskets, packing. Johns-Manville Corp., New York, N. Y.

Chem-Rem—Protective coatings. Speco, Inc., Cleveland, O.

Chem-Weld—Plastic pipe. Southwestern Plastic Pipe Co., Mineral Wells, Tex.

Chevron—Packing. Garlock, Inc., Palmyra, N. Y.

Chex-Spray—Valve bonnet shields. Industrial Products Co., Philadelphia, Pa.

Chicago—Brakes. Dreis & Krump Mfg. Co., Chicago Ill.

Chicago—Pipe benders. Lidseen of North Carolina, Inc., Hayesville, N. C.

Chill Air—Unitary air conditioners. Steam-O-Matic Corp., Sedalia, Mo.

Chill-A-Tron—Water chillers. Kritzer Products Div., Peerless of America, Inc., Chicago, Ill.

CHILL VACTOR—Steam jet compressors. Croll-Reynolds Engineering Co., Inc.,

Stamford, Conn.
Chimney Sweep—Chemical destroyers. Coughlan Co., G. N., West Orange, N. J.
Chinook Fin—Finned surface. Bayley Blower Co., A Div. of the Green Fuel Economizer Co., Inc., Milwaukee, Wis.
Chlorimet—Heat exchangers, fans, fittings, heaters, pipe. Duriron Co., Inc., The, Dayton, O.
Chlorinjector—Water chlorinators. Clayton Mark & Co., Evanston, Ill.
Chlorinizer—Chlorinators, and treatment. B-I-F Industries, Builders-Providence Div., Providence, R. I.
Chlor-O-Feeder—Feeders, pumps. B-I-F Industries, Proportioneers Div., Providence, R. I.
Chlor-O-Mite—Pumps, water treatment. B-I-F Industries, Proportioneers Div., Providence, R. I.
Chromalox—Electric heating panels, preheaters, fuel oil units, dryers, indicator-controllers, heating systems, radiation, superheaters, thermostats, switches, ventilators, unit heaters. Wiegand Co., Edwin L., Pittsburgh, Pa.
Chrome—Packing. Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.
Chrome Lock—Gaskets, tape. Products Research Co., Burbank, Calif.
Chromend—Electrodes. Arcos Corp., Philadelphia, Pa.
ChromiCoat—Protective coatings. Oakite Products, Inc., New York, N. Y.
Chromix—Refractories. Quigley Co., Inc., New York, N. Y.
Chromolox—Protective coatings. Master Mechanics Co., Cleveland, O.
Chronoflo—Flow meters, gages, indicators, recorders. B-I-F Industries, Builders-Providence Div., Providence, R. I.
Chronometer—Valves. Defender Instrument & Regulator Co., Boody, Ill.
C-I Extra High—Paint for hot surfaces. Chem Industrial Co., Brooklyn, O.
Cinch—Expansion bolts, expansion anchors. National Lead Co., New York, N. Y.
Clair-Tex—Connections. St. Clair Rubber Co., Detroit, Mich.
Clamp-A-Leak—Pipe repair clamps. Chelsea Metal Stamping Co., New York, N. Y.
Clarco—Unit heaters. Clarage Fan Co., Kalamazoo, Mich.
Cla Rite—Filters. Croll-Reynolds Engineering Co., Inc., Stamford, Conn.
Claymont—Steel pipes. Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp., New York, N. Y.
Clean-Flo—Motors. Allis Co., Louis, The, Milwaukee, Wis.
Clean Right—Soot destroyers. General Filters, Inc., Novi, Mich.
Clearstream—Chemical feeders; water treatment. Reynolds Water Conditioning Co., Detroit, Mich.
Clearstream—Pipe fittings; plastic pipe; plastic tubing. Yardley Plastic Co., Columbus, O.
Clearview—Gages. Boston Machine Works Co., Lynn, Mass.
Cleerall—Air filters. Continental Air Filters, Inc., Louisville, Ky.
Cleveland—Heaters. Hotstream Heater Co., Cleveland, O.
Cliff—Boilers, water heaters. Terre Haute Boiler Works Co., Terre Haute, Ind.
Climate Changer—Unit air conditioners. Trane Co., The, LaCrosse, Wis.
Climate-Lab—Test chambers. American Instrument Co., Inc., Silver Spring, Md.
Clipper Seals—Packing seals. Johns-Manville Corp., New York.
Cliptak—Adhesives. Cain Mfg. Inc., Birmingham, Ala.
Clorinal—Electricap capacitors. Sprague Electric Co., North Adams, Mass.
Coal Chuter—Coal and ash conveyors. New London Engineering Co., New London, Wis.
Coal-Pak Automatic—Boilers. International Boiler Works Co., The, East Stroudsburg, Pa.
Cocheo—Belting. Williams & Son, I. B., Dover, N. H.
Coeco—Controls and dampers. Combustion Equipment Co., Moline, Ill.
Cogsdill—Drills. Threadwell Tap & Die Co., Greenfield, Mass.
Cold Generator—Chillers. Trane Co., The, La Crosse, Wis.
Coldmobile—Unitary air conditioners. McGraw-Edison Co., Transportation Cooling Div., Chicago, Ill.
Color-Port—Gages. Yarnall-Waring Co., Philadelphia, Pa.
Colplate—Coils, condensers, coolers, systems. Dean Products, Inc., Brooklyn, N. Y.
Coltemp—Insulation. Badham Insulation Co., Inc., Birmingham, Ala.
Combi-Matic—Burners. Power-Flame Div., Inc., Grandview, Mo.
Combustioneer—Stokers. Bituminous Coal Equipment, Inc., Indianapolis, Ind.
Comfort-Flo—Furnaces. Montag Inc., Portland, Ore.
Comfortline—Baseboard radiation. National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Comfostat—Thermostats. Johnson Service Co., Milwaukee, Wis.
Cominco—Insulating cement, insulation. United States Mineral Wool Co., Stanhope, N. J.
Commander—Boilers. National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Commercial-Aire—Heaters, units. Mammoth Industries, Inc., Minneapolis, Minn.
Compact-Aire—Unitary air conditioners, units. Mammoth Industries, Inc., Minneapolis, Minn.
Compact-A-Metic—Refrigerating compressors. Melchoir, Armstrong, Dessau, Inc., Ridgefield, N. J.
Compact Scotch—Boilers. Titusville Iron Works Co., The, Titusville, Pa.
Compacunit—Pumps. Warrens Pumps, Inc., Warren, Mass.
Compak—Boilers. International Boiler Works Co., The, East Stroudsburg, Pa.
Compar—Plastic tubing, vibration absorbers, non-metal hose and fittings. Resistoflex Corp., Roseland, N. J.
Compass—Belting. Goodyear Tire & Rubber Co., Akron, O.
Compkil—Silencers for reducing compressor intake noise. Midwest Noise Controls, Indianapolis, Ind.
Compound Lever—Hand shears and snips. Bartlett Mfg. Co., Detroit, Mich.
Conceal-X—Unitary air conditioners. Kritzer Products Div., Peerless of America, Inc., Chicago, Ill.
Conco—Boiler cleaning compounds, water treatment. Continental Products Co., Euclid, O.
Condenseal—Pipe insulation, tubing. Jarrow Products, Inc., Chicago, Ill.
Condensifilters—Refrigerating condensers. Hankison Corp., Canonsburg, Pa.
Condenso-Purge—Refrigerant gas purgers. Watkins Co., J.E., Maywood, Ill.
Condor—V-belts, hose, pipe. Raybestos-Manhattan, Inc., Passaic, N. J.
Condo-Vac—Vacuum pumps. Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Conflex—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
Coni-Vane—Ventilators. Allen Cooler & Ventilator, Inc., Rochester, Mich.
Connectite—Gaskets. American Felt Co., Glenville, Conn.
Connect-O-Matic—Pipe couplings. Wiggins Oil Tool Co., Inc., E. B., Los Angeles, Calif.
Conomanual—Air filters. Continental Air Filters, Inc., Louisville, Ky.
Conomatic—Filters. Continental Air Filters, Inc., Louisville, Ky.
Conomotors—Duct and valve operators. Conoflow Corp., Subsidiary of Walworth Co., Philadelphia, Pa.
Consawmatic—Saws. Clipper Mfg. Co., Kansas City, Mo.
Conseco—Water chillers, oil coolers, heat exchangers, filters, headers, water heaters, joints, preheaters, separators, superheaters. Condenser Service & Engineering Co., Inc., Hoboken, N. J.
Conso—Ventilators. Consolidated General Products, Inc., Houston, Tex.
Consolidated—Valves. Manning, Maxwell & Moore, Inc., Stratford, Conn.
Constellation Line—Arc welders. Trindl Products, Ltd., Chicago, Ill.
Con-Tac-Ton—Switches. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Continental—Boilers. Boiler Engineering & Supply Co., Phoenixville, Pa.
Controlair—Valves. Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.
Convector—Humidifiers. Maid-O'-Mist, Inc., Chicago, Ill.
Converto—Roof ventilators. Ammerman Co., Inc., Stillwater, Minn.
Conveyoflo—Conveyors. B-I-F Industries, Builders-Providence Div., Providence, R. I.
Conveyor—Pulleys and Sheaves. The American Pulley Co., Div. Van Norman Industries, Inc., Philadelphia, Pa.
Con-Vol Units—Mixing units for double duct air conditioning units. Thermotank, Inc., Air Products Div., Detroit, Mich.
Cool-Aire—Unit coolers. Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Coolerator—Dehumidifiers, humidifiers, unitary air conditioners. Albion Div., McGraw-Edison Co., Albion, Mich.
Coolero—Ventilators. Hirschman-Pohle Co., Inc., LeRoy, N.Y.
Coolex—Water treatment. Anderson Chemical Co., Inc., Macon, Ga.
Coolite—Windows. Mississippi Glass Co., St. Louis, Mo.
Coolmaster—Unit coolers. Kramer Trenton Co., Trenton, N. J.
Cooltong—Torches. Lincoln Electric Co., Cleveland, O.
Coolube—Oil. Warren Refining & Chemical Co., The, Cleveland, O.
Copper Boy—Pipe hangers and supports. Western Wire Products Co., St. Louis, Mo.
Cop-R-Loy—Sheets. Wheeling Corrugating Corp Wheeling, W. Va.
Cop-R-Loy—Sheets, pipe. Wheeling Steel Corp., Wheeling, W. Va.
Copr-Tube—Fittings. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Copyflex—Blueprint machine. Bruning Co., Inc., Charles, Mt. Prospect, Ill.
Cordan—Leather belting and V belts. Sikes Co., S. R., Minneapolis, Minn.
Core Bore—Masonry drills. Diamond Products, Inc., Elyria, O.
Cor-In Galvanode—Electrolytic devices. Rotometals, San Francisco, Calif.
Cork-Flex—Bases and pad, absorbers, noise elimination for cooling towers. Vibration Mountings & Controls, Inc., Corona, N. Y.
Cork-Rib—Bases and pad, absorbers. Vibration Mountings & Controls, Inc., Corona, N. Y.
Corrocote—Coatings. Chemical Coatings & Engineering Co., Media, Pa.
Corrodicide—Water treatment, compounds. Metropolitan Refining Co., Inc., Long Island City, N. Y.
Corrodine—Compound and water treatment. Metropolitan Refining Co., Inc., Long Island City. N. Y.
Corrosave—Water treatment. Sterling E. Norcross Co., Bloomfield, N. J.
Corvel—Protective coatings. Polymer Corp., The, Reading, Pa.
Cottrell—Dust collectors. Western Precipitation Corp., Los Angeles, Calif.
C-O-TWO—Fire extinguishing systems. Fyr-Fyter Co., Dayton, O.
Counterflo—Furnaces. Dravo Corp., Machinery Div., Pittsburgh, Pa.
Counterpoise—Shaft seals. A. W. Chesterton Co., Everett, Mass.
Coustifab—Building insulation. Cordo Chemical Corp., Norwalk, Conn.
Cox—Water heaters. O'Brien Steam Specialty Co., Inc., Syracuse, N. Y.
Coxe—Stokers. Combustion Engineering, Inc., New York, N. Y.
Cozy—Wall heaters. Advance Furnace Co., Wichita, Kans.
Crag—Treatment. Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Crescent—Valves. Powell Co., Wm., The, Cincinnati, O.
Cresline—Plastic fittings, flanges, valves, pipe, tubing. Crescent Plastics, Inc., Evansville, Ind.
Crest—Water heaters. Day & Night Mfg. Co., LaPuente, Calif.
Crispin—Air eliminators, pipe joints, valves. Multiplex Mfg. Co., Berwick, Pa.
Croloy—Pipe, pipe fittings, flanges, tubes, and tubing. Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Cromaloy—Solder. Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Cross-Flo—Dehydrators. Remco, Inc., Zelienople, Pa.
Cryscoat—Protective coatings. Oakite Products, Inc., New York, N. Y.
Crystal—Protective coatings. Barrett Div., Allied Chemical Corp., New York, N. Y.
Crystolon—Refractories and refractory cement, protective metals, furnace cement. Norton Co., Worcester, Mass.
Cube-Fill—Insulation. Carney Co., Inc., The, Mankato, Minn.
Cupralum—Coils and panels. Knapp Mills, Inc., Long Island City, N. Y.
Curtiss—Unitary air conditioners. Kleer Kleen Mfg. Co., Hayward, Calif.
Cushioned Power—Valves. White-Rogers Co., St. Louis, Mo.
Custom line—Thermostats. White-Rodgers Co., St. Louis, Mo.
Cutawl—Electric saws, portable. International Register Co., Chicago, Ill.
Cutno—Packing. Greene, Tweed & Co., North Wales, Pa.
Cut-O-Matic—Flame cutters. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Cut Trode—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
Cyclo-Core—Drills. New England Carbide Tool Co., Inc., Medford, Mass.
Cyclo-Jet—Burners. Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Cyclon—Plastic tubing. Munray Products, Div. of Fanner Mfg. Co., Cleveland, O.

Cyclone—Hoists. Chisholm-Moore Hoist Div., Columbus McKinnon Corp., Tonawanda, N. Y.

Cyclonetic—Burners. Webster Engineering Div., Midland-Ross Corp., Tulsa, Okla.

Cyclothene—Plastic tubing. Munray Products, Div. of Fanner Mfg. Co., Cleveland.

Cyclo-trell—Dust collectors. Research-Cottrell, Inc., Bound Brook, N.J.

Cyclo-Twist—Drills. New England Carbide Tool Co., Inc., Medford, Mass.

Cycoil—Dust Collectors. American Air Filter Co., Inc., Louisville, Ky.

DFN—Dehydrators, hose, filters, pipe hangers and supports, sight glasses, mufflers, strainers. McIntire Co., The, Livingston, N. J.

D.I.P.—Bends, insulation, conduit, pre-insulated pipe. Durant Insulated Pipe Co., E. Palo Alto, Calif.

D.I.P.—Insulation, conduit, pre-insulated pipe. Durant Insulated Pipe Co., Inc., Cleveland, O.

DRC-Blue Circle—Baseboard radiation. Dunkirk Radiator Corp., Dunkirk, N. Y.

DRH Hanger—Absorbers, hangers. Vibration Mountings & Controls, Inc., Corona, N. Y.

DRP—Doors and panels. Auer Register Co., Cleveland, O.

DX—Softeners. Stover Water Softener Co., St. Charles, Ill.

Dacor—Adsorbers, air filters. Barnebey-Cheney, Inc., Columbus, O.

Daftinaire—Humidifiers HERRmidifier Co., Lancaster, Pa.

Dall—Nozzles. B-I-F Industries, Builders-Providence Div., Providence, R. I.

Dampermatic—Baseboard radiation. Beacon-Morris Corp., Boston, Mass.

Danco—Plastic pipe, tubing. Danielson Mfg. Co., Danielson, Conn.

Dapto-flow—Pumps. Goulds Pumps, Inc., Seneca Falls, N. Y.

Darcova—Packing. Sims Pump Valve Co., Hoboken, N. J.

Dart—Unions, fittings. Fairbanks Co., The, New York, N. Y.

Day-Nite Acratherm—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Day-Steel—Pulleys and sheaves. Dayco Corp., Dayton, O.

Dayton—V belt drives. Dayco Corp., Dayton, O.

Dayton Cog-Belt—Belts. Dayco Corp., Dayton, O.

Dean—Cleaners. Pierce Co., Wm. B., The, Buffalo, N. Y.

Dearsol—Fuel oil treatment. Dearborn Chemical Co., Chicago, Ill.

Debanode—Protective coatings. Debevoise Co., The, Brooklyn, N. Y.

Debecote—Coatings. Debevoise Co., The, Brooklyn, N. Y.

Decorama—Heaters. Coleman Co., Inc., Wichita, Kans.

Decorator—Thermostats. Mears Electric Controls, Inc., Portland, Ore.

Decosteel—Protective coatings. Debevoise Co., The, Brooklyn, N. Y.

Deep Bed—Air filters. American Air Filter Co., Inc., Louisville, Ky

Deepco—Speed changers. Nason Co., Clarkston, Mich.

Deflectrol—Turning vanes. Barber-Colman Co., Rockford, Ill.

Defrostolator—Hot gas defrosting systems. Tenney Engineering, Inc., Union, N. J.

Dehydrators—Dehumidifiers. Selas Corp. of America, Dresher, Pa.

Dekoron—Protective coatings, wire, tubing. Moore & Co., Samuel, Mantua, O.

Dekoron E-Z—Fittings. Moore & Co., Samuel, Mantua, O.

Delaytrol—Valves. Webster Electric Co., Racine, Wis.

Delrin—Plastics, powders and resins. du Pont de Nemours & Co., Inc., E. I., Polychemicals Dept., Wilmington, Del.

Delta—Steel boilers. Zingham Co., William C., Chicago, Ill.

Deltadyne—Indicator-Controllers. Aircraft Porous Media, Inc., Glen Cove, N. Y.

Demi—Valves. Dahl Co., Inc., G. W., Bristol, R. I.

Demi-Purge—Meters. Dahl Co., Inc., G. W., Bristol, R. I.

Demon Air-Set—Refractories. Plibrico Co., Chicago, Ill.

Densitrol—Indicators. Precision Thermometer & Instrument Co., Philadelphia, Pa.

Deodorite—Air freshening compounds. Barnebey-Cheney Co., Columbus, O.

Deoterge—Cleaning compounds. Airkem, Inc., New York, N.Y.

Deoxidine—Cleaning compounds. Amchem Products, Inc., Ambler, Pa.

Derco—Terminal seals for compressors. Watsco, Inc., Hialeah, Fla.

Dereka—Protective coatings. Debevoise Co., The, Brooklyn, N. Y.

Desco—Blower wheels. Denbo Engineering and Sales, Inc., Indianapolis, Ind.

Design-Air—Diffusers. Krueger Air Conditioning Co., Tucson, Ariz.

Desoutter—Portable shears. Newage Industries, Inc., Jenkintown, Pa.

De-Sta-Co.—Fan housings, pipe clamps, valves. Detroit Stamping Co., Detroit.

Detect-A-Fire—Controls. Fenwal Inc., Ashland, Mass.

Detroit—Traps. Nason Co., Clarkston, Mich.

Detroit—Dehydrators, elbows and tees, refrigerant strainers, valves. American-Standard Controls Div., Detroit, Mich.

Dew-O-Metric—Indicators. Desomatic Products Div., Atlantic Research Corp., Falls Church, Va.

Dewpointaire—Recorders. Cargocaire Engineering Corp., New York, N. Y.

Dewpointer—Recorders. Cargocaire Engineering Corp., New York, N.Y.

Dexter—Valve reseaters, air separators, steam traps. Leavitt Machine Co., Orange, Mass.

Di-Acro—Benders, brakes, machines, punches, shears. O'Neil-Irwin Mfg. Co., Lake City, Minn.

Dialaire—Unitary air conditioners. Dialatemp, Inc., St. Louis, Mo

Diamalloy—Shears and snips, tools. Diamond Tool & Horseshoe Co., Duluth, Minn.

Diamond—Compounds, enamels and lacquers. Thompson and Co., Oakmont, Pa.

Diamond—Valves. Imperial-Eastman Corp., Chicago, Ill.

Diamond—Adsorbers, filters, water chlorinators, water conditioners, chemical feeders, water softeners, water treatment. Oshkosh Filter & Softener Co., Oshkosh, Wis.

Diamond H—Switches, thermostats, relays. Hart Mfg. Co., Hartford, Conn.

Diaphlex—Bellows, relays, solenoids, and switches. Cook Electric Co., Chicago, Ill.

Dieselite—Compounds. Metropolitan Refining Co., Inc., Long Island, N. Y.

Diffusaire—Diffusers. Hart & Cooley Mfg. Co., Holland, Mich.

Dilecto—Plastic pipe and tubing gaskets. Continental Diamond Fibre Corp., Newark.

Dill Dust Spot Tester—Tester, dust spot. Research Appliance Co., Allison Park, Pa.

Dimetcote—Coatings. Amercoat Corp., South Gate, Calif

Direct-Aire—Unit coolers. Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.

Directilator—Roof ventilators. Clarage Fan Co., Kalamazoo, Mich.

Director—Wall heaters. Perfection Div., Hupp Corp., Cleveland, O.

Directrol—Vanes. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.

Dir-O-Gage—Liquid level gages. Instruments, Inc., Tulsa, Okla.

Divco—Fittings, gaskets, coils, pipe and tubing, sheets, plugs, solder, valves. Division Lead Co., Summit, Ill.

Dixigas—Gas welding rod. Atlantic Steel Co., Atlanta, Ga.

Dixisteel—Angles, bars, beams, channels and tees. Atlantic Steel Co., Atlantic, Ga.

D'Lux line—Thermostats. White-Rodgers Co., St. Louis, Mo.

Do-All—Drills, tools, electric hammers, plaster groovers. Wodack Electric Tool Corp., Chicago, Ill.

Docken—Shears, electric, portable. Nielsen, Inc., E. V., Stamford, Conn.

Domette—Ventilators. Penn Ventilator Co., Philadelphia, Pa.

Domex—Ventilators. Penn Ventilator Co., Philadelphia, Pa.

Dominion—Gaskets, packing. Darcoid Co., Inc., New York, N. Y.

Do-Mor-Ad—Saw tools. Pioneer Tool Co., Racine, Wis.

Dorex—Adsorbers. Connor Engineering Corp., Danbury, Conn.

Doro-Chrome—Benders, cutters, tools, wrenches. Duro Metal Products Co., Chicago, Ill.

Dot—Insulation fasteners. Carr Fastener Co., Div. of United Carr Fastener Corp., Cambridge, Mass.

Double Check—Boiler compounds. Hampton-Cross Co., The, Louisville, Ky.

Double Diamond—Hygrometers, regulators, psychrometers, thermometers. H. B. Instrument Co., Philadelphia, Pa.

Double-Flow—Cooling towers. Marley Co., The, Kansas City, Mo.

Double Retort Stoker—Stokers. Detroit Stoker Co., Monroe, Mich.

Double-Seal—Copper tube fittings. Hays Mfg Co., Erie, Pa.

Doubleton—Pumps. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

DovRloy—Steel sheets. Reeves Steel & Mfg. Co., Dover, O.

Downblast—Unit heaters. Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

Downflow—Unit heaters. McQuay, Inc., Minneapolis, Minn.

Drafstop—Air dampers. Air Flow Controls Co., Minneapolis, Minn.

Draft-A-Justor—Draft controls. Preferred Utilities Mfg. Corp., New York, N. Y.

Draft King—Caps, vent flue. Wood Mfg. Co., A. R., Luverne, Mich.

Draft Korektor—Controls. Cole-Sewell Engineering Co., St. Paul, Minn.

Draft-O-Stat—Barometric controls. Hotstream Heater Co., Cleveland, O.

Draftrite—Gages. Bacharach Industrial Instrument Co., Pittsburgh, Pa.

Draft Stabilizer—Draft controls. Boston Machine Works, Co., Lynn, Mass.

Dragnet—Leak detectors, testers. Universal Controls Corp., Dallas, Tex.

Dragon—Vacuum cleaners, dust collectors. Empire Chemical Products Co., Newark.

Drainator—Traps. Coe Mfg. Co., Painesville, O.

Drain-Dri—Sump pumps. Yeomans Bros. Co., Melrose Park, Ill.

Drainette—Pumps. Goulds Pumps, Inc., Seneca Falls, N. Y.

Draintrol—Traps. Schaub Engineering Co., Fred H., Downers Grove, Ill.

Dri-Acid—Chemical treatment. Allen Co., Robert G., Mechanicsville, N.Y.

Dricon—Condensers. Recold Corp., Los Angeles, Calif.

Dri-Cooler—Condensers. Marley Co., The, Kansas City, Mo.

Dri-Cor—Dehydrators, filters. Henry Valve Co., Melrose Park, Ill.

Dri-Fan—Condensers, cooling towers. Recold Corp., Los Angeles, Calif.

Drifreeze—Dehydrant and acid neutralizer, dehydrators. Berna Corp., Long Island City.

Drilfast—Anchors. U. S. Expansion Bolt Co., York, Pa.

Drillmaster—Electric and pneumatic drills. Diamond Products, Inc., Elyria, O.

Dril-Tec—Gas welding rods. Eutectic Welding Alloys Corp., Flushing, N.Y

Dri-Pipe—Insulation. Mystik Adhesive Products, Inc., Chicago, Ill.

Dri-Seal No. 5—Pipe joint sealant tape. Chemtrol, Plastic Piping Systems Equipment, Santa Ana, Calif.

Dri-Set—Refractories and refractory cement. Basic Inc., Cleveland, O.

Drive-IT—Hangers and supports, fasteners. Omark Industries Inc., Portland, Ore.

Dri-Vue—Meters. Henry Valve Co., Melrose Park, Ill.

Drycid—Treatment. Oakite Products, Inc., New York, N. Y.

Dry-Eye—Dehydrators. Ansul Chemical Co., Refrigeration Div., Marinette, Wis.

Dry-Ex—Water chillers, oil coolers. Acme Industries, Inc., Jackson, Mich.

Dryfol—Insulation. Reflectal Corp., Subsid. Borg-Warner Corp., Chicago, Ill.

Dryzalv—Protective coatings. American Solder & Flux Co., Philadelphia, Pa.

Dry-Ice—Refrigerants. Pure Carbonic Co., Div. of Air Reduction Co., Inc., New York.

Drymaster—Dehumidifiers. Dryomatic Corp., Alexandria, Va.

Dryvin—Expansion bolts. Star Expansion Industries Corp., Mountainville, N.Y.

Dual Adjusta-Flo—Valves. Sullivan Valve & Engineering Co., Butte, Mont.

Dual-Aire—Unit coolers. Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.

Dualaire—Dust collectors. Western Precipitation Corp., Los Angeles, Calif.

Dualarc—Arc Welders. Electric Arc, Inc., Newark, N. J.

Dual-Clone—Dust collectors. Day Co., The, Minneapolis Minn.

Dual-Dial—Gages. Rochester Mfg. Co., Inc., Rochester, N. Y

Dualene—Fuel oil treatment. Allen Co., Robert G., Mechanicsville, N. Y.

Dualsteel—Unions. Rockwood Sprinkler Co., Worcester, Mass.

Dualvector—Unitary air conditioners. Kritzer Radiant Coils, Inc., Batavia, Ill.

Dualvent—Roof ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.

Dubl-Dome—Heat insulating windows. Pam Co., The, Portland, Ore.

Duboth—Boiler water treatment, compounds. Metropolitan Refining Co., Inc., Long Island City, N. Y

Duclone—Dust collectors. Ducon Co., The, Mineola, N. Y.

Duco—Enamels and lacquers. du Pont de Nemours & Co., E. I., Finishes Div., Wilmington, Del.

Ductak—Adhesives. Cain Mfg. Inc., Birmingham, Ala

Ductatherm—Thermostats. Mercoid Corp., The, Chicago, Ill.

Ductilend—Arc welding electrodes. Arcos Corp., Philadelphia, Pa.

Ductite—Tape. Johns-Manville Corp., New York, N. Y.

Duct-Muff—Sound absorbers. Midwest Noise Control, Indianapolis, Ind.

Duct-O-fuser—Air diffusers. United Sheet Metal Co., Inc., Columbus, O.

Duct Tape—Adhesive duct tape. Duro-Dyne Corp., Farmingdale, L. I., N. Y.

Ducturns—Vanes. Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.

Ductype—Fans. South Bend Air Products, Inc., South Bend, Ind.

Duct Wrap—Vapor barriers. Zippertubing Co., The, Los Angeles, Calif.

Dulux—Enamels and lacquers. du Pont de Nemours & Co., E. I., Finishes Div., Wilmington, Del.

Dum Dum—Sealing compounds, protective coatings. Arco Co., The, Cleveland, O.

Duo Blo—Air heaters. American Furnace Co., St. Louis, Mo.

Duo Equalizing HypTor—Pipe joints. Zallea Brothers, Wilmington, Del.

Duomeens—Water treatment. Armour Industrial Chemical Co., Div. of Armour & Co., Chicago, Ill.

Duonetic—Gas and oil burners. Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.

Duo-Stat—Heating systems, thermostats. Johnson Service Co., Milwaukee, Wis.

Duo-Therm—Heaters, unitary air conditioners. Consumer Products, Lansing, Mich.

Duotrol—Regulators, indicators, switches. Automatic Control Co., St. Paul, Minn.

Duplex—Insulation. Keasbey & Mattison Co., Ambler, Pa.

Duplex—Pipe cutting machines. Bignall & Keeler Div., John Ramming Machine Co., St. Louis, Mo.

Duplex Twin Rail—Bases and pads. Korfund Co., Inc., Westbury, L. I., N. Y.

Durable—Pipe flanges and pipe fittings. Nuclear and Power Equipment Corp., S. San Francisco, Calif.

DuraBilt—Registers. Auer Register Co., Cleveland, O.

Duracor—Ducts and duct fittings, hoods, plastic sheets for ducts and hoods. Ceilcote, Inc., Cleveland, O.

Duracron—Enamels and lacquers. Pittsburgh Plate Glass Co., Pittsburgh, Pa.

Duradiant—Burners. Selas Corp. of America. Dresher, Pa.

Duraflex—Stokers. Canton Stoker Corp., Canton, O.

Duramesh—Pipe wrap. Johns-Manville Corp., New York, N. Y.

Duranite—Enamels and lacquers. Glidden Co., Midwest Industrial Div., Chicago, Ill.

Duratape—Pipe wrap. Johns-Manville Corp., New York, N. Y.

Durco—Fans, heaters, heat exchangers, fittings, pipe. Duriron Co., Inc., Dayton, O.

Durcopump—Pumps. Duriron Co., Inc., Dayton, O.

Durethene—Vapor barriers. Koppers Co., Inc., Pittsburgh, Pa.

Durex—Bearings. Delco Moraine Div., General Motors Corp., Dayton, O.

Durichlor—Fans, fittings, heaters, heat exchangers, pipe. Duriron Co., Inc., Dayton, O.

Duridine—Protective coatings. Amchem Products, Inc., Ambler, Pa.

Durimet—Fans, fittings, heaters, heat exchangers, pipe. Duriron Co., Inc., Dayton, O.

Durolite—Insulation. Minnesota & Ontario Paper Co., Insulite Div., Minneapolis, Minn.

Duropipe—Fiber pipe. Sonoco Products Co., Construction Products Div., Hartsville, S. C.

Durospead—Heads. Grinnell Co., Inc., Providence, R. I.

Dur-X—Plastic fittings and pipes. Franklin Plastics, Inc., Franklin, Pa.

Dust King—Dust collectors. Dust Filter Co., Chicago, Ill.

Dustkop—Dust collectors. Aget Mfg. Co., Adrian, Mich.

Dust-Magnet—Filters. Stoddard Industries, Inc., Cudahy, Wis.

Dust Master—Dust collectors. Bannister Co., Inc., Cambridge, Mass.

Dust-Master—Dust collectors. Cincinnati Fan and Ventilating Co., Cincinnati, O.

Dustronic—Air filters. Radex Corp., Chicago, Ill.

Dust-Stop—Air Filters. Owens-Corning Fiberglas Corp., New York, N. Y.

Dustube—Dust collectors. Wheelabrator Corp., Mishawaka, Ind.

Dutch Boy—Solder, protective coatings, enamels and lacquers. National Lead Co., New York, N. Y.

Duxbak—Leather belting and packing. Schieren Co., Chas. A., Camden, N. J.

Dux-Sul-Glue—Adhesives. Grant Wilson, Inc., Chicago, Ill.

Dux-Sulation—Insulation. Grant Wilson, Inc., Chicago, Ill.

Duzall—Solder fluxes. All-State Welding Alloys Co., Inc., White Plains, N. Y.

Dy-Chek—Dye penetrant. Turco Products, Inc., Wilmington, Calif.

Dyanfan—Roof ventilators. Penn Ventilator Co., Philadelphia, Pa.

Dycon—Air Filters. Continental Air Filters, Inc., Louisville, Ky.

Dylan—Plastics, powders and resins. Koppers Co., Inc., Pittsburgh, Pa.

Dylene—Plastics, powders and resins. Koppers Co., Inc., Pittsburgh, Pa.

Dylite—Plastics, powders and resins. Koppers Co., Inc., Pittsburgh, Pa.

Dynaflow—Fans. South Bend Air Products, Inc., South Bend, Ind.

Dyna-Line—Electric motors, reducers. Brown-Brockmeyer Co., Inc., Dayton, O.

Dynatrol—Liquid level switches, alarms, indicators. Automation Products, Inc., Houston, Tex.

Dyna-V—Belts, drives. Dodge Mfg. Corp., Mishawaka, Ind.

Dyne-Aire—Heaters. American Foundry & Furnace Co., Bloomington, Ill.

Dynel—Fibers for air filters. Union Carbide Development Co., Div. of Union Carbide Corp., New York, N. Y.

Dynetic—Gas burners. Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.

Dyno-Mite—Drills. Millers Fall Co., Greenfield, Mass.

E B Weld Insert—Rings. Arcos Corp., The, Philadelphia, Pa.

E-C—V belts. Goodyear Tire & Rubber Co., Akron, O.

E C & M—Motor controllers and starters, switches. Electric Controller & Mfg. Co., Div. of Square D Co., Cleveland, O.

EEZ-It—Penetrant solvent for loosening scale and threaded joints. Tankit Co., The, Newark, N. J.

EFM-Fire Jet—Conveyors. Electric Furnace-Man, Inc., Emmaus, Pa.

EKCCO—Fans. E. K. Campbell Co., Kansas City, Mo.

EMD—Blowers. L. J. Wing Mfg. Co., Linden, N. J.

EMS—Compounds, destroyers, feeders, water filters, scale removal, water softeners, treatment. Smith Chemical Co., E. W., La Puente, Calif.

ES—Sheets. Eastern Stainless Steel Corp., Baltimore, Md.

E-Z—Registers, regulators, hangers and supports. Acme Mfg. Co., Philadelphia, Pa.

E.Z.—Hangers or brackets, Inserts. Healey Ruff Co., St. Paul, Minn.

E-Z—Cutters. Collins Machinery Corp., Monterey Park, Calif.

E-Z—Soot destroyers. Normal Chemical Co., St. Paul, Minn.

EZ Code—Electric wire. Westline Products Div. of Western Lithograph Co., Los Angeles, Calif.

E-Z Flex—Pipe joints. Beacon Brass Co., Waltham, Mass.

E-Z-On—Regulators. Gerett Corp., M. A., Milwaukee, Wis.

E-Z See—Glasses. Remco, Inc., Zelienople, Pa.

E-Z View—Chemical feeders. Clayton Mark & Co., Evanston, Ill.

E-Z-Wash—Air filters. Continental Air Filters, Inc., Louisville, Ky.

Eagleline—Wall or roof intakes for outdoor air. Titus Mfg. Corp., Waterloo, Ia.

Easy-Clean—Cleaning compounds, tank. Jet-Lube, Inc., Burbank, Calif.

Easy-Flo—Solder. Handy & Harman, New York, N. Y.

Easy-Wrap—Protective coatings, pipe and tubing insulation, pipe wrap. Rhopac, Inc., Skokie, Ill.

Ebko—Conduits, exchangers, pipe, systems. Kaiser Co., E. B., Glenview, Ill.

Econo-Ash—Coal and ash conveyors. The Allen-Sherman-Hoff Co., Wynnewood, Pa.

Econ-O-Fab—Duct connections, ducts and duct fittings. Duro-Dyne Corp., Farmingdale, Long Island, N. Y.

Econoflow—Regulators. Smith Welding Equipment Corp., Minneapolis, Minn.

Econ-O-Matic—Motor bases. American Pulley Co., The, Div. Van Norman Industries, Inc., Philadelphia, Pa.

Economite—Commercial and industrial gas burners. Mid-Continent Metal Products Co., Chicago, Ill.

Econ-o-Mizer—Cooling towers. Acme Industries, Inc., Jackson, Mich.

Economo—Burners. Dalzen Mfg. Co., St. Clair, Mich.

Economy—Unit ventilators. Arex Co., Chicago, Ill.

Econostat—Heating systems. Barber-Coleman Co., Rockford, Ill.

Econovent—Ventilators. Western Engineering & Mfg. Co., Los Angeles, Calif.

Econo-Watt—Electric motors. Redmond Co., Inc., Owosso, Mich.

EDCO—Heaters. Cauhorn Distributing Co., Detroit, Mich.

Edgetallic—Gaskets. Darcoid Co., Inc., New York, N. Y.

Effico—Ventilators. Hirschman-Pohle Co., Inc., LeRoy, N. Y.

Eisen-Heiss—Protective coatings, enamels and lacquers, high temperature paint. Master Mechanics Co., Cleveland, O.

Ejectopump—Pumps. Ferro Corp., Cleveland, O.

Elastic Metallic—Packing. Chesterton Co., A. W., Everett, Mass.

Elastic Porcelain—Tank linings. Porce-Lin Tank Lining Co., Detroit, Mich.

Elasto Rib—Vibration isolating bases. Korfund Co., Inc., Westbury, L. I., N. Y.

Elaterite—Coatings. Ohmlac Paint & Refining Co., Inc., Long Island City, N. Y.

Elbolets—Fittings. Bonney Forge & Tool Wks., Allentown, Pa.

Electraclor—Water chlorinators. Clayton Mark & Co., Evanston, Ill.

Electric—Pipe cleaning machines. Spartan Tool Div., H. D. Conkey & Co., Chicago, Ill.

Electric Trimline Baseboard—Radiators. Vulcan Radiator Co., Hartford, Conn.

Electrifugal Pumps—Centrifugal pumps. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Electrionic — Alarms. Barber-Colman Co., Rockford, Ill.

Electrobase—Radiation, baseboard. Embassy Steel Products, Inc., Brooklyn, N. Y.

Electro-Cell—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Electro-Flo—Air filters. Donie Engineering Sales Inc., Indianapolis, Ind.

Electroflo—Valves. Hays Mfg. Co., Erie, Pa.

Electrofluid—Speed changers. Link-Belt Co., Chicago, Ill.

Electro Flux-Stik—Solder. Lake Chemical Co., Chicago, Ill.

Electro-Hot—Heaters. Red Spot Electric Co., Tacoma, Wash.

Electro-Klean—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Electro-Matic—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Electromaze—Air filters. Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.

Electro-Mesurflo—Valves. Hays Mfg. Co., Erie, Pa.

Electro-Mist—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Electromite—Valves. Hays Mfg. Co., Erie, Pa.

Electro-Pl—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Electr-O-Probe—Heating boiler cut-offs, indicators, leak detectors, switches. Instruments, Inc., Tulsa, Okla.

Electro-Rod—Pipe cleaning machines. Spartan Tool Div., H. D. Conkey & Co., Chicago, Ill.

Electro-Sheave—Shaft mounted drives. Warner Electric Brake & Clutch Co., Beloit, Wis.

Electro-Sheet Foil—Sheets. Anaconda American Brass Co., Waterbury, Conn.

Electroweld—Welders. Electric Arc, Inc., Newark, N. J.

Electro-Wind—Ventilators. Allen Cooler & Ventilator Inc., Rochester, Minn.

Electrunite—Stainless steel tubing. Republic Steel Corp., Cleveland, O.

Elemenex—Electrical capacitors. Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.

Elgex—Steam system treatment. Elgin Softener Corp., Elgin, Ill.

Elgin—Arc welders. Borm Mfg. Co., Elgin, Ill.

Elgin—Louvers and shutters. Elgo Shutter & Mfg. Co., Detroit, Mich.

ElKoloy—Welders. P. R. Mallory & Co., Inc., Indianapolis, Ind.

ELKonite—Welders. P. R. Mallory & Co., Inc., Indianapolis, Ind.

ELKonium—Welders. P. R. Mallory & Co., Inc., Indianapolis, Ind.

Ell-Jac—Pipe covering protectors. Childers Mfg. Co., Houston, Tex.

Elm—Dampers. Elgo Shutter & Mfg. Co., Detroit, Mich.

Elno—Electrolytic devices for preventing corrosion. Patrol Valve Co., The, Cleveland, O.

Emd-Com—Blowers. Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.

Emergency—Steam traps. Wright-Austin Co., Detroit, Mich.

Emline—Tank linings. Emjay Maintenance Engineers, Rutherford, N. J.

Empire—Refractories and refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.

Empire Mallets—Tools. Greene, Tweed & Co., North Wales, Pa.

Enamelite—Coatings. Presstite Div., American Marietta Co., St. Louis, Mo.

Enco—Burners, registers, fueloil units. Engineer Co., New York, N. Y.

Endcor—Water treatment. Dearborn Chemical Co., Chicago, Ill.
Endo—Air dampers. Elgo Shutter & Mfg. Co., Detroit, Mich.
Enduro—Hose. Continental Rubber Wks., Erie, Pa.
Enduro—Steel tubing, pipe. Republic Steel Corp., Cleveland, O.
Enduro Block—Insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.
Enduro#300—Unions. Jefferson Union Co., Inc., Lexington, Mass.
Entrained Combustion—Burners. Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Epco—Grilles, thermostat guards, pipe locators. Erdle Perforating Co., Rochester, N. Y.
Epokote—Protective coatings for metals. Adams Chemical Corp., El Segundo, Calif.
Epoxid—Tank linings. Interchemical Corp., Finishes Div., Newark, N. J.
Epoxin—Tank linings. Interchemical Corp., Finishes Div., Newark, N. J.
Epoxy—Protective coatings. Gates Engineering Co., Wilmington, Del.
Equalizer—Deaerators, feeders, systems, traps. Acker Corp., Meridian, Miss.
Equa-Trol—Valves, manifolds and headers. Panel Heat, Inc., Copiague, N. Y.
Equavalve—Pipe fittings & Valves. Panel Heat, Inc., Copiague, N. Y.
Eraydo—Zinc sheets. Illinois Zinc Co., Div. of Hydrometals, Inc., Chicago, Ill.
Ermeto—Fittings. Weatherhead Co., The, Ft. Wayne Div., Ft. Wayne, Ind.
Escon—Electrical relays. Electro-Switch & Controls, Inc., Culver City, Calif.
Esso—Heaters, unitary air conditioners. Gilbert & Barker Mfg. Co., West Springfield, Mass.
Esso Bond—Refractories. Ramtite Co., The, Chicago, Ill.
Eternium—Protective coatings. Barrett Div., Allied Chemical Corp., New York, N. Y.
Eutec-Arc—Arc welders. Eutectic Welding Alloys Corp., Flushing, N. Y.
EutecBor—Gas welding rods. Eutectic Welding Alloys Corp., Flushing, N. Y.
Eutechrom—Welding electrodes, gas welding rod. Eutectic Welding Alloys Corp., Flushing, N. Y
EuteCushion-Shim—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.
Eutec Rod—Rods, solder. Eutectic Welding Alloys Corp., Flushing, N. Y.
EutecSol—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.
Eutec-Tin-Weld—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.
Eutectofilm—Gas welding rod. Eutectic Welding Alloys Corp., Flushing, N. Y.
Eutecto-Mask—Compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.
Eutector Flux—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.
EutecTorch—Torches, welding and cutting apparatus. Eutectic Welding Alloys Corp., Flushing, N. Y.
EutecTrode—Welding electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
EVACTOR—Heaters and pumps. Croll-Reynolds Engineering Co., Inc., Stamford, Conn.
Evanaction—Valves. Taylor Instrument Companies, Rochester, N. Y.
Evenflo—Air filters. Hadley Products Co., Inc., Marietta, O.
Everbrite—Paint. Warren Refining & Chemical Co., The, Cleveland, O.
Ever Clean Boiler Process—Compounds. North American Mogul Products Co., The, Cleveland, O.
Everglas—Water heaters. Hotstream Heater Co., Cleveland, O.
Everjet—Coatings. Barrett Div., Allied Chemical Corp., New York, N. Y.
Ever Ready—Holders and files. Geneva Mfg. Co., South Elgin, Ill.
Evolene—Treatment. Berna Corp., Long Island City, N. Y.
Excel 250#—Unions. Jefferson Union Co., Inc., Lexington, Mass
Excel—Water heaters. The Cleveland Heater Co., Cleveland, O.
ExFlux—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.
Exhaust-O-Vent—Exhaust fittings. Engwald Corp., The, Inwood, Long Island, N. Y.
Exitrol—Louvers and shutters. Air Flow Controls Co., Minneapolis, Minn.
Exon—Plastics, powders and resins. Chemicals Div., Firestone Plastics Co., Pottstown, Pa.
Expand-R-Strap—Fasteners. Gerrard & Co., A. J., Des Plaines, Ill.
Expelsor—Ejectors. Yeomans Bros. Co., Melrose Park, Ill.
Explosimeter—Leak detectors. Mine Safety Appliances Co., Pittsburgh, Pa.
External—Water heaters. Taco Heaters, Inc., Cranston, R. I.
Extra Dry Esotoo—Refrigerants. Virginia Smelting Co., West Norfolk, Va.
Ex-Trol—Expansion tanks. American Tube & Controls, Inc., West Warwick, R. I.
Eye-Hye—Indicators. Reliance Gauge Column Co., Cleveland, O.
Ezkleen—Filters. Research Products Corp., Madison, Wis.
EZ Treat—Water treatment. Metropolitan Refining Co., Inc., Long Island City, N. Y.
Ezy-Kleen—Strainers. Blackmer Pump Co., Grand Rapids, Mich.

FAC—Controls for starting and stopping pumps, and switches. Flow Actuated Control Co., Inc., New York, N. Y.
F & E—Stokers, and incinerators. Flynn & Emrich Co., Baltimore, Md.
FS—Bellows. Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Fab-Ric—Connectors. Cain Mfg. Inc., Birmingham, Ala.
Fabri-Flex—Bases and pads, absorbers, noise elimination for cooling towers. Vibration Mountings & Controls, Inc., Corona, N. Y.
Fabrikated—Grilles, registers. Independent Register Co., Cleveland, O.
Faceweld—Electrodes. Lincoln Electric Co., The, Cleveland O.
Fairco Braze—Valves. Fairbanks Co., The, New York, N. Y.
Fan-Aire—Burners. Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.
Fanaire—Diffusers, registers. Auer Register Co., Cleveland, O.
Fandaire—Condensers, Compressors, unitary air conditioners. Aimco Products Corp., Subsid. of Yuba Consolidated Industries, Inc., Tulsa, Okla.
Fanjet—Systems. Muellermist Irrigation Co., Maywood, Ill.
Fanmix—Burners. Coppus Engineering Corp., Worcester, Mass.
Far-Air—Unitary air conditioners, filters, humidifiers. Farr Co., Los Angeles, Calif.
Farragut—Packing. Darcoid Co., Inc., New York, N. Y.
FasFill Convection—Connectors. Scully Signal Co., Melrose, Mass.
Fashion—Thermostats. White-Rodgers Co., St. Louis, Mo.
Faslite—Gas pilots. Scully Signal Co., Melrose, Mass.
Fastak—Adhesives. Cain Mfg. Inc., Birmingham, Ala.
Fast's—Couplings. Koppers Company, Inc., Metal Products Div., Baltimore, Md.
FauceHot—Heaters. Bastian-Morley Co., Inc., LaPorte, Ind.
Favorite—Ratchet wrenches. Greene, Tweed & Co., North Wales, Pa.
Featherfin—Heating and cooling surface, unit coolers. Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Featherweight—Soot blowers. A. W. Chesterton Co., Everett, Mass.
Featherweight—Unit heaters. Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Featherweight Champ—Pipe cutting and threading machines, pipe vise stands. Oster Mfg. Co., Wickliffe, O.
Febogene—Water treatment. Berna Corp., Long Island City, N. Y.
Federal—Filters for oil burners. Norwood Products Co., Div. of A. R. Wood Mfg. Co., Luverne, Minn.
Federal—Filters. Wood Mfg. Co., A. R., Luverne, Minn.
Feedrator—Chemical feeders. Fischer & Porter Co., Warminster, Pa.
Fein—Pipe cutting machines, electric saws. Krieg, Inc., Victor J., New York, N. Y.
Fel-Pro—Gaskets, packing. Felt Products Mfg. Co., Skokie, Ill.
Felt Grip—Bases and pads, absorbers. Vibration Mountings & Controls, Inc., Corona, N. Y.
Fenn's Rotary—Ventilators. Waverly Heating Supply Co., Beverly, Mass.
Ferrenewo—Valves. Lunkenheimer Co., Cincinnati, O.
Ferro-Therm—Insulation. American Flange & Mfg. Co., Inc., New York, N. Y.
Ferroweld—Electrodes. Lincoln Electric Co., Cleveland, O.
Ferulok—Fittings. Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Feutron—Filters. American Felt Co., Glenville, Conn.
Fiber-Aire—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.
Fibercast—Plastic pipe, plastic tubing. Youngstown Sheet & Tube Co., Youngstown, O.
Fiberglas—Insulation. Owens-Corning Fiberglas Corp., New York, N. Y.
Fiber Glass—Insulation. Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Fiber Glass—Insulation. Johns-Manville Corp., New York, N. Y.
Fiberlite—Insulation. Minnesota and Ontario Paper Co., Insulite Div., Minneapolis, Minn.
Fibrocel—Pipe insulation. Johns-Manville Corp., New York, N. Y.
Fieldink—Fittings, pipe joints. LaFavorite Rubber Mfg. Co., Hawthorne, N. J.
Fill-Trol—Valves. American Tube & Controls, Inc., West Warwick, R. I.
Filtaire—Air filters. Morrison Products, Inc., Cleveland, O.
Filterdown—Filters. American Air Filter Co., Inc., Louisville, Ky.
Fil-Thru—Gages. Applied Mechanics Co., Boston, Mass.
Filtr-Aire—Filters. Peden Equipment Co., Houston, Tex.
Filtrex—Filters. Drico Industrial Corp., Passaic, N. J.
Fine-Line—Baseboard radiation. Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Finger Strap—Fasteners. Gerrard & Co., A. J., Des Plaines, Ill.
Finnflex—Bases, hangers. Finn & Co., Inc., T. R., Hawthorne, N. J.
Fin Ray—Radiation. National-U.S. Radiator Div., Crane Co., Johnstown, Pa.
Fin Vector—Radiation. Dunham-Bush, Inc., West Hartford, Conn.
Firecrete—Refractories. Johns-Manville Corp., New York, N. Y.
Fire Fybr Felt—Insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.
Fireite—Furnace cement, refractories. Johns-Manville Corp., New York, N. Y.
Fire Jet—Stokers. Electric Furnace-Man, Inc., Emmaus, Pa.
Fireye—Alarms, flame failure controls, recorders, combustion control systems, indicators, control systems, draft regulators, switches, valves. Electronics Corp. of America, Cambridge, Mass.
Firite—Stokers. Hoffman Combustion Engineering Co., Lincoln Park, Mich.
Firma—Ventilators. Hirschman-Pohle Co., Inc., LeRoy, N. Y.
Firomatic—Filters, links, switches, valves. Morse-Smith-Morse, Inc., Watertown, Mass.
Fit-All—Pipe hangers and supports. Western Wire Products Co., St. Louis, Mo.
Fit-rite—Pipe and tubing insulation. Fibrous Glass Products, Inc., A Subsid. of Pall Corp., Alpa Plaza, Hicksville, N. Y.
Fitrite—Tools, roof ventilators. Levow, Inc., David, South Hackensack, N. J.
Fixt-Aire—Grilles, registers. Hart & Cooley Mfg. Co., Holland, Mich.
Flametrol—Controls. Barber-Colman Co., Rockford, Ill.
Flame-O-Matic—Flame failure controls. Instruments, Inc., Tulsa; Okla.
Flange-Jacks—Separators. Williams & Co., J. H., Buffalo, N. Y.
Flare—Fittings. Flodar Corp., Cleveland, O.
Flat-Belt—Pulleys and sheaves. The American Pulley Co., Div. Van Norman Industries, Inc., Philadelphia, Pa.
Flaw-Findr—Dye penetrant. Met-L-Chek Co., Los Angeles, Calif.
Fleet Line—Motors. Brown-Brockmeyer Co., Inc., Dayton, O.
Fleet-Line—Pipe fittings. Steel Forgings, Inc., Shreveport, La.
Fleetweld—Welding electrodes. Lincoln Electric Co., Cleveland, O.
Flex—Hose. Flexaust Co., New York, N. Y.
Flex—Nipples. Techniflex Div., Port Jervis, N. Y.
Flexazone—Unitary air conditioners. National-U. S. Radiator Div., Crane Co., Johnstown, Pa.
Flexazone—Unitary air conditioners. Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
Flexbolt BTR—Vibration insolating bases. Lord Mfg. Co., Erie, Pa.
Flexcell—Bases and pads. Celotex Corp., The, Chicago, Ill.
Flexfast—Hose clamps. Flexible Tubing Corp., Guilford, Conn.
Flexfelt—Insulation. National Gypsum Co., Buffalo, N. Y.
Flexfoam—Pipe insulation. Delaware Insulation Co., Wilmington, Del.
Flex-Hose—Flexible hose. Korfund Co., Inc., Westbury, L. I., N. Y.
Flexiblac—Protective coatings. Samuel Cabot, Inc., Boston, Mass.
Flexibond—Protective coatings. Continental Products Co., Euclid, O.
Flexi-Duct—Connections. Grant Wilson, Inc., Chicago, Ill.
Flexidyne—Couplings, drives. Dodge Mfg. Corp., Mishawaka, Ind.
Flexiflo—Diffusers. Universal Diffuser Corp., Tuckahoe, N. Y.
Flexifoam—Insulation. Foamade Industries, Oak Park, Mich.

Flex-I-liner—Rotary pumps. Vanton Pump & Equipment Corp., Hillside, N. J.

Flexipipe—Tubing. Bemis Bro. Bag Co., St. Louis, Mo.

Flexloc—Lock nuts. Standard Pressed Steel Co., Jenkintown, Pa.

FLEXODISC—Expansion joints. Croll-Reynolds Engineering Co., Inc., Stamford, Conn.

FLEXOLEED—Expansion joints. Croll-Reynolds Engineering Co., Inc., Stamford, Conn.

Flexon—Bellows, pipe hangers and supports, steel tubing, pipe joints, ducts and duct fittings. Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.

Flexon Expansion Compensator—Pipe joints. Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.

Flexpansion—Fittings and hose. Techniflex Div., Port Jervis, N. Y.

Flexpipe—Absorbers. Anaconda Metal Hose Div., Anaconda American Brass Co., Waterbury, Conn.

Flex Plates—Bases and pads, absorbers, noise elimination for cooling towers. Vibration Mountings & Controls, Inc., Corona, N. Y.

Flex-Seal—Pumps. Bart Mfg. Corp., Belleville, N. J.

Flex-sulation—Insulation. Grant Wilson, Inc., Chicago, Ill.

Flextan—Packing. Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.

Flex-Tube—Analyzers, gages, kits, meters, testers, manometers, switches, pilot tubes. Dwyer Mfg. Co., F. W., Michigan City, Ind.

Flex Valve—Valves. Farris Flexible Valve Corp., Palisades Park, N. J.

Flexzorber—Hose. Finn & Company, Inc., T. R., Hawthorne, N. J.

Flex-Zorber—Adsorbers. Saussé & Co., M.W., Los Angeles, Calif.

Flikit—Ratchet wrenches. Custanite Corp., Brooklyn, N. Y.

Flip-Loc—Hose and tubing clamps. Instrument Cases Div. of TA Mfg. Corp., Los Angeles, Calif.

Flite-Flo—Conveyors. Link-Belt Co., Chicago, Ill.

Flo—Dehydrant and acid neutralizer, for refrigerating systems. Allin Mfg. Co., Chicago, Ill.

Float-O-Matic—Pumps. March Mfg. Co., Inc., Skokie, Ill.

Floatrol—Switches, regulators. Automatic Control Co., St. Paul, Minn.

Flo-Ball—Valves. Hydromatics, Inc., Livingston, N. J.

Flochek—Valves. Taco Heaters, Inc., Cranston, R. I.

Flo-Coater—Booths. Griffin & Co., Louisville, Ky.

Flocold—Unit coolers. Drayer-Hanson Div., Crane Co., Los Angeles, Calif.

Floguide—Flow meters. Fischer & Porter Co., Warminster, Pa.

Flo-Klean—Filters. Cuno Engineering Corp., Meriden, Conn.

Flo-KonTrold—Boilers. Boiler Engineering & Supply Co., Phoenixville, Pa.

Floline—Tubing. Nylon Molding Corp., Garwood, N. J.

Flo-Line—Valves. Hanna Engineering Wks., Chicago, Ill.

Flo-Master—Louvers and shutters. Acme Engineering & Mfg. Corp., Muskogee, Okla.

Flo-Matic—Conveyors, stokers. American Coal Burner and Wood Stoker Corp., Chicago.

Floor-Level—Radiation. Rempe Co., Chicago.

Floorline—Radiation. National-U.S. Radiator Div., Crane Co., Johnstown, Pa.

Flo-Pilot—Valves. Hanna Engineering Wks., Chicago, Ill.

Floret—Meters. Bacharach Industrial Instrument Co., Pittsburgh, Pa

Florite—Air velocity meters, and anemometers. Bacharach Industrial Instrument Co., Pittsburgh, Pa.

Florite Desiccant—Dehumidifiers, dehydrators. Floridin Co., Tallahassee, Fla.

Flo-Scope—Meters. Selas Corp. of America, Dresher, Pa.

Flo-Set—Valves. Hanna Engineering Wks., Chicago, Ill.

Flotectic Flux—Welding compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.

Flo-Tee—Fittings. Panel Heat, Inc., Copiague, N. Y.

Flotrol—Humidifiers, valves. Cleveland Humidifier Co., Cleveland, O.

Flo-Tube—Conveyors. Canton Stoker Corp., Canton, O.

Flo-watch—Flow meters. B-I-F Industries, Builders-Providence Div., Providence, R. I.

Floway—Turbine pumps. Fiese & Firstenberger Mfg., Inc., Fresno, Calif.

Flow-Cold—Water chillers, compressors, coolers and towers. Acme Industries, Inc., Jackson, Mich.

Flowmaster—Pumps. Marco Development Co., Inc., Wilmington, Del.

Flow-Mizer—Cooling towers, condensers. Acme Industries, Inc., Jackson, Mich.

Flow-O-Larm—Flow switches. Instruments, Inc., Tulsa, Okla.

Flow-Pac—Chillers, compressors. Acme Industries, Inc., Jackson, Mich.

Flowrator—Meters, systems. Fischer & Porter Co., Warminster, Pa.

Flowrite—Valves. Powers Regulator Co., Skokie, Ill.

Flow-Temp—Unitary air conditioners. Acme Industries, Inc., Jackson, Mich.

Flow-Therm—Chillers, compressors, coolers. Acme Industries, Inc., Jackson, Mich.

Flow-Tube—Meters. Foster Engineering Div., General Controls Co., Warwick, R. I.

Fluid Joists—Coils. Fricke, Fred J., Albuquerque, N. M.

Fluid Pak—Refrigerating compressors. Dialatemp, Inc., St. Louis, Mo.

Fluid-Tite—Pipe, asbestos. Keasbey & Mattison Co., Ambler, Pa.

Fluidyne—Pumps. Peerless Pump Hydrodynamics Div., Food Machinery and Chemical Corp., Los Angeles, Calif.

Fluoroflext—Tubing, lined pipe, hose. Resistoflex Corp., Roseland, N. J.

Fluoroseal—Cement and compounds. Industrial Plastic Fabricators, Norwood, Mass.

Flush-Kleen—Sewage ejectors and pumps. Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.

Flux-'N-Solder—Solder. Johnson Mfg. Co., Inc., Mt. Vernon, Ia.

Flux-Stik—Solder. Lake Chemical Co., Chicago, Ill.

Foamglas—Insulation. Pittsburgh Corning Corp., Pittsburgh, Pa.

Foamsil—Insulation, refractories and refractory cement. Pittsburgh Corning Corp., Pittsburgh, Pa.

Force—Pipe joint cement and compounds. American Solder & Flux Co., Philadelphia, Pa.

Force-Flo—Unit heaters. Trane Co., The, LaCrosse, Wis.

Form-A-Gasket—Cement and compounds. Permatex Co., Inc., Long Island, N. Y.

Form-A-Jig—Compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.

Formet—Water treatment. Perolin Co., Inc., New York, N. Y.

Formula 59—Water treatment. Oakite Products, Inc., New York, N. Y.

Fosco—Water heaters. Schoedinger, Inc., F. O., Columbus, O.

4A Vichrome—Tank linings. Interchemical Corp., Finishes Div., Newark, N. J.

4-Star—Adhesive tape. Johns-Manville Corp., New York, N. Y.

Fracto Crete—Refractories. Ramtite Co., The, Chicago, Ill.

Franche—Flexible couplings. Waldron Couplings, Waldron-Hartig Div., Midland-Ross Corp., New Brunswick, N. J.

Francite—Cement, refractories and refractory cement. France Refractories Co., J. H., Snow Shoe, Pa.

Franco-Therm—Cement, insulating. France Refractories Co., J. H., Snow Shoe, Pa.

Franset—Cement, refractories and refractory cement. France Refractories Co., J. H., Snow Shoe, Pa.

Franset with Super Bond—Cement, and refractories and refractory cement. France Refractories Co., J.H., Snow Shoe, Pa.

Free-Flow—Ventilators. Burt Mfg. Co., Akron, O.

Free-Flow—Air filters. Wickford Products, Inc., Bronx, N. Y.

Fre-Flow—Strainers. Fisher Governor, Marshalltown, Ia.

Free-Vane—Controls. Bristol Co., The, Waterbury, Conn.

Frigid Arc—Welding electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.

Frigistat—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Frogalloy—Electrodes. McKay Co., Pittsburgh, Pa.

Frost-Tite—Fittings. Remco, Inc., Zelienople, Pa.

Fuelguard—Regulators. Ashcraft Co., J. P., Dallas, Tex

Fuel-Rite — Treatment. Gotham Refining Chemical Co., New York, N. Y.

Fuel Saver—Boilers. International Boiler Works Co., The, East Stroudsburg, Pa.

Fuelsaver—Controls, regulators. Walker Mfg. & Sales Co., St. Joseph, Mo.

Fueltone X-10—Fuel oil treatment. Ampion Corp., Long Island City, N. Y.

Fuel-tron—Fuel oil treatment. Radiator Specialty Co., Charlotte, N. C.

Fulflo—Filters. Commercial Filters Corp., Melrose, Mass.

Fulgrip—Pulleys and sheaves. Maurey Mfg. Corp., Chicago, Ill.

Full Flow—Magnetic traps. Ladish Co., Tri-Clover Div., Kenosha, Wis.

Fulljet—Spray nozzles. Spraying Systems Co., Bellwood, Ill.

Full-Seal—Pipe repair clamps. Adams Pipe Repair Products, So. El Monte, Calif.

Full-view—Meters. Brooks Instrument Co., Inc., Hatfield, Pa.

Fulscope—Recorders, recorder-controllers, regulators. Taylor Instrument Companies, Rochester, N. Y.

Fusionbrazed—Steel tubing. Avon Tube Div., Higbie Mfg. Co., Rochester, Mich.

Fusionweld—Tubing. Avon Tube Div., Highbie Mfg. Co., Rochester, Mich.

Fybr-Tech—Gaskets and sheets. Technical Ply-Woods Sales, Chicago, Ill.

Fyr-Feeder—Stokers, burners. American Coal Burner and Wood Stoker Corp., Chicago, Ill.

Fyrite—Analyzers, combustion testing kits. Bacharach Industrial Instrument Co., Pittsburgh, Pa.

GAC—Baseboard radiation. General Alliance Corp., San Diego, Calif.

G-B Duct—Ducts and duct fittings. Gustin-Bacon Mfg. Co., Kansas City, Mo.

G-B Snap-On—Insulation. Gustin-Bacon Mfg. Co., Kansas City, Mo.

G-Fin—Cooling and heating surface, tubing. Griscom-Russell Co., Massillon, O.

GIL—Filters, regulators, valves. Gas & Oil Industry Laboratories, Inc., Irvington, N. J.

GIL Governoret—Valves. Gas & Oil Industry Laboratories, Inc., Irvington, N. J.

G-K—Cement and compounds. Atlas Mineral Products Co., Mertztown, Pa.

G-R—Aftercoolers, oil coolers, water chillers, exchangers. Griscom-Russell Co., Massillon, O.

GS—Anemometers, hygrometers, indicators, psychrometers, welding and cutting apparatus. General Scientific Equipment Co., Philadelphia, Pa.

GT—Shaft Seals. Greene, Tweed & Co., North Wales, Pa.

G.T.D.—Masonry drills. Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.

Gaco—Pipe fittings, hard rubber pipe. Gates Engineering Co., Wilmington, Del.

Gaco-Neoprene & Rubber—Valves, fittings, tank linings, pipe. Gates Engineering Co., Wilmington, Del.

Gacote-Neoprene Vinyl—Coatings. Gates Engineering Co., Wilmington, Del.

Gagetron—Regulators, indicators. Instruments, Inc., Tulsa, Okla.

Galbestos—Sheet metal. Robertson Co., H. H., Pittsburgh, Pa.

Gallo—Gages. Barclay, Inc., Robert, Chicago, Ill.

Galongage—Gages. Applied Mechanics Co., Boston, Mass.

Galva-Lux—Enamels and lacquers. Acorn Refining Co., Cleveland, O.

Galvover—Welding compounds. All-State Welding Alloys Co., Inc., White Plains, N. Y.

Gascope—Leak detectors. Mine Safety Appliances Co., Pittsburgh, Pa.

Gask-O-Seal—Seals and gaskets. Parker Seal Co., Div. of Parker-Hannifin Corp., Cleveland, O.

Gas-O-Matic—Heaters. Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.

Gas-Pak—Welding rod. Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.

Gasweld—Torches, valves, regulators, welding and cutting apparatus. General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.

Gat Fasteners—Clamps, fasteners, nuts and washers. Tinnerman Corp., George A., Cleveland, O.

Gaugetrol—Regulators. Automatic Switch Co., St. Paul, Minn.

Gearchem—Gear pumps. Eco Engineering Co., Newark, N. J.

Gear-Draulic—Trenching machines. Auburn Machine Works, Inc., Auburn, Neb.

Gearmotor—Gears, speed reducers and increasers. Link-Belt Co., Chicago, Ill.

GearMotoRs—Gears. Philadelphia Gear Corp., King of Prussia, Pa.

Gear-O-Matic—Electric motors. Franklin Electric Co., Inc., Bluffton, Ind.

Gelkote—Enamels and lacquers. The Glidden Co., Midwest Industrial Div., Chicago, Ill.

Gel-Kote—Protective coatings for metals. Glidden Co., The, Cleveland, O.

Gemco—Bolts, clamps, hangers and supports, nuts and washers, fasteners. Goodloe E. Moore, Inc., Danville, Ill.

Gem Foam—Insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.

Gemware—Hygrometers, psychrometers, thermometers, recorders, switches. G. M. Mfg. Co., New York, N. Y.

Genetron—Refrigerants. General Chemical Div., Allied Chemical Corp., New York, N. Y.

Gentile—Meters. Foster Engineering Div., General Controls Co., Warwick, R. I.

Geon—Plastics. Goodrich Chemical Co., B. F., Cleveland, O.
Geophone—Leak detectors. Schneider Mfg. Co., Reading, Mass.
Gilbarco—Unitary air conditioners, oil burners, heaters, pumps. Gilbert & Barker Mfg. Co., West Springfield, Mass.
Gilmer—V-belts, v-belt drives. New York Belting & Packing Co., Passaic, N. J.
Gilsonite—Protective coatings. Ohmlac Paint & Refining Co., Inc., Long Island City, N. Y.
Gilsulate—Underground pipe insulation. American Gilsonite Co., Salt Lake City, Utah.
Gilt Edge—Belting. Rhoads & Sons, J. E., Wilmington, Del.
Glasfloss—Filters. Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Glas-Kleer—Filters. Fibrous Glass Products, Inc., A Subsid. of Pall Corp., Alpha Plaza, Hicksville, N. Y.
Glassheat—Electric heating panels. Continental Radiant Glass Heating Corp., New York, N. Y.
Glider—Catalog holders and files. Momar Industries, Inc., Chicago, Ill.
Glidpol—Enamels and lacquers. The Glidden Co., Midwest Industrial Div., Chicago, Ill.
Glid-Rez—Protective coatings for metals. Glidden Co., The, Cleveland, O.
Globe—Fire extinguishing systems. Fyr-Fyter Co., Dayton, O.
Glo Tech—Glass pipe. Fischer & Porter Co., Warminster, Pa.
Glowan—Gas burners. Martin Co., Inc., J. O., San Francisco, Calif.
Goetze—Gaskets. Johns-Manville Corp., New York, N. Y.
Gold Bond Therm-Bloc—Insulation. National Gypsum Co., Buffalo, N. Y.
Golden Bantam—Valves. Henry Valve Co., Melrose Park, Ill.
Golden Fleece—Building insulation. Carney Co., Inc., The, Mankato, Minn.
Gold Ribbon—Thermometers. Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Gothcide—Water treatment. Gotham Refining Chemical Co., New York, N. Y.
Grad-U-Motor—Damper operators. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Gradustat—Regulators, thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Gradutrol—Diaphragm valves, radiator orifices. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Grafitex—Sleeve bearings. Gatke Corp., Chicago, Ill.
Graham—Valves. Texsteam Corp., Houston, Tex.
Granco—Meters, pumps, strainers. Granberg Corp., Subsid. of American Meter Co., Inc., Oakland, Calif.
Granodine——Protective coatings. Amchem Products, Inc., Ambler, Pa.
Granodraw—Protective coatings. Amchem Products, Inc., Ambler, Pa.
Graph-O-Matic—Panel boards. Powers Regulator Co., Skokie, Ill.
Graylite—Insulation. Minnesota & Ontario Paper Co., Insulite Div., Minneapolis, Minn.
Grean Seal—Belting. Goodyear Tire & Rubber Co., Akron, O.
Greastop—Air filters. Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.
Great Seal—Gaskets, packing, tape, valves. New York Belting & Packing Co., Passaic, N. J.
Grid—Finned surfaces, radiation, unit heaters, humidifiers. Murray Mfg. Co., D. J., Wausau, Wis.
Gripzins—Expansion bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Gritseald—Rotary pumps. St. Louis Tool Co., St. Louis, Mo.
Gruvagrip—Couplings, fittings. Gustin-Bacon Mfg. Co., Kansas City, Mo.
Gruvajoint—Couplings. Gustin-Bacon Mfg. Co., Kansas City, Mo.
Guardian—Oil tank gages. Applied Mechanics Co., Boston, Mass.
Guillotine—Cutters, pipe cutting and threading machines, saws. Wachs Co., E. H., The, Chicago, Ill.
Gum-Bestos—Tape. Grant Wilson, Inc., Chicago, Ill.
Gunchrome—Refractories and refractory cement. Basic Inc., Cleveland, O.
Gundol—Refractories and refractory cement. Basic Inc., Cleveland, O.
Gunk—Cleaning compounds. Radiator Specialty Co., Charlotte, N. C.
Gun Mag—Refractories and refractory cement. Basic, Inc., Cleveland, O.
Gun Mix—Refractories and refractory cement. Basic Inc., Cleveland, O.
Gusher—Pumps. Ruthman Machinery Co., Cincinnati, O.
Gyrol—Drives. American-Standard Industrial Div., Detroit, Mich.
Gyrol Fluid Drive—Speed changer. American-Standard Industrial Div., Detroit, Mich.

H & C—Grilles, registers. Hart & Cooley Mfg. Co., Holland, Mich.
HCS Systems—Ceilings. Johns-Manville Corp., New York, N. Y.
HH&HHV—Unitary air conditioners. Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
HS — Fans. American-Standard Industrial Div., Detroit, Mich.
HSP—High pressure blowers. New York Blower Corp., Chicago, Ill.
HT—Torches. Lincoln Electric Co., The, Cleveland, O.
HTH—Water treatment. Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.
H-T-W Flo-Kontrold—Heating boilers. Boiler Engineering & Supply Co., Phoenixville, Pa.
HX-Changers—Heat exchangers. Rempe Co., Chicago, Ill.
Hally-Filters. Delavan Mfg. Co., West Des Moines, Ia.
Hammel—Wall heaters. Republic Appliance Div., Republic-Transcon Industries, Inc., Beverly Hills, Calif.
Hammerkraft—Enamels and lacquers. Hilo Varnish Corp., Div. of Carpenter-Morton Co., Everett, Mass.
Hammerlin—Coatings, enamels. Interchemical Corp., Finishes Div., Newark, N. J.
Hammertrol—Shock absorbers. American Tube & Controls, Inc., West Warwick, R. I.
Hamrflute—Drills. Star Expansion Industries Corp., Mountainville, N. Y.
Ham-R-Tool—Tools. Fastway Fasteners, Inc., Lorain, O.
Hamrtwist—Drills. Star Expansion Industries Corp., Mountainville, N. Y.
Hancock—Valves. Manning, Maxwell & Moore, Inc., Stratford, Conn.
Handi-Can—Refrigerants. Pennsalt Chemicals Corp., Philadelphia, Pa.
Handi-Heet—Torches, refrigerant leak detectors. Smith Welding Equipment Corp., Minneapolis, Minn.
Handi-Rack—Storage racks. XXth Century Heating & Ventilating Co., The, Akron, O.
Hand O Matic—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
Handy—Valves. Allin Mfg. Co., Chicago, Ill.
Handy—Benders. Holsclaw Bros., Inc., Evansville, Ind.
Handy—Valves. Lunkenheimer Co., Cincinnati, O.
Handy Andy—Vise stands. Western Wire Products Co., St. Louis, Mo.
Handy-Flux—Solder. Handy & Harman, New York, N. Y.
Handy-Pak—Baseboard radiation. Axeman-Anderson Co., Williamsport, Pa.
Harco—Pipe fittings and pipe flanges. Harrison Steel Corp., Brooklyn, N. Y.
Hardalloy—Electrodes. McKay Co., Pittsburgh, Pa.
Harmeco—Filters, separators. Harman Equipment Co., Los Angeles, Calif.
Hastelloy—Nickel and nickel alloy pipe fittings, pipe coils, pipe flanges, pipe nipples, pipe sheets and tubing. Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
Haze-lok—Fittings, non-metal hose and fittings. Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Hazelton—Pumps, strainers, valves. Barrett Haentjens & Co., Hazleton, Pa.
Health-Air—Air filters. Mamco Corp., Racine, Wis.
Heath-Crete—Refractories. Quigley Co., Inc., New York, N. Y.
Hearth patch—Refractories and refractory cement. Basic Inc., Cleveland, O.
Heart-Oak—Belting. Graton & Knight Co., Worcester, Mass.
Heat-aid—Refractories. Pyrolite Products Co., Cleveland, O.
Heat-Cel—Hot gas defrosting systems. Dole Refrigerating Co., Chicago, Ill.
Heatcote—High temperature paint. Debevoise Co., The, Brooklyn, N. Y.
HeatEjector—Heat exchangers. Degree Corp., Kansas City, Kans.
Heatflex—Cables, heaters. S&C Mfg. Co., Cincinnati, O.
Heat-Hog—Coolers. Heatron, Inc., York, Pa.
Heatmaster—Heaters. Coleman Co., Inc., The, Wichita, Kans.
Heatmaster—Heaters. Siebring Mfg. Co., George, Ia.
Heat-Pak—Boilers, heaters. Aldrich Co., The, Wyoming, Ill.
Heat-Rem—Paint for hot surfaces. Speco, Inc., Cleveland, O.
Heat-Rem H-170—Paint for hot surfaces. Speco, Inc., Cleveland, O.
Heatrim—Radiation. American-Standard Plumbing & Heating Div., New York, N. Y.
Heat-Rite—Registers. Auer Register Co., Cleveland, O.
Heatsum—Electric heating panels, cable. Roberson Inc., Seattle, Wash.
Heat-Valve—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.
Heat Wagon—Heaters. Lennox Industries, Inc., Marshalltown, Ia.
Heat-X-It—Roof ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.
Heavy Duty—Torches, welding and cutting apparatus. Smith Welding Equipment Corp., Minneapolis, Minn.
Heavy Duty—Pipe cutters. Erie Tool Works, Erie, Pa.
Heavy Duty—Pipe wrenches. Ridge Tool Co., Elyria, O.
Heavy Duty Patchmaster—Clamps. Aeroquip Corp., Marman Div., Los Angeles, Calif.
Heetaires—Heaters, electric heating panels. Markel Electric Products, Inc., Buffalo, N. Y.
Heilex—Tanks. Heil Process Equipment Corp., Cleveland, O.
Heliarc—Arc welding electrodes, arc welders. Linde Co., Div. of Union Carbide Corp., New York, N. Y.
Heliflow—Aftercoolers, chillers, oil coolers, heat exchangers, water heaters. Graham Mfg. Co., Inc., Great Neck, Long Island, N. Y.
Helitork—Valve operators. Earle Gear & Machine Co., Philadelphia, Pa.
Hellite—Refractories. Johns-Manville Corp., New York, N. Y.
Herculite—Tanks. Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Herculoy—Tubing. Revere Copper and Brass, Inc., New York, N. Y.
Herecrol—Protective coatings, tank linings, enamels and lacquers, lined pipe. Heresite & Chemical Co., Manitowoc, Wis.
Hermetic Eye—Sight glasses for pipe lines. Superior Valve & Fittings Co., Pittsburgh, Pa.
HerNel-Cool—Unit ventilators. Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Hev-E-Duty — Burners. Industrial Combustion, Inc., Milwaukee, Wis.
Hev-E-Oil—Burners. Industrial Combustion, Inc., Milwaukee, Wis.
Hi—Bolts, clamps, cleaners, drills, insulation fasteners, pipe hangers and supports. Holub Industries, Inc., Sycamore, Ill.
Hi-Amp—Tools, pipe clamps. Lenco, Inc., Jackson, Mo.
Hi-Cap—Furnaces. Syncromatic Corp., Watertown, Wis.
Hi-Dri—Refrigerant Dehydrators. Wabash Corp., Chicago, Ill.
Hideway—Cooling towers. Toungate & Coats, Austin, Tex.
Hi-Duty—Tubing cutters, valves, flaring tools. Imperial-Eastman Corp., Chicago.
Hi-Duty—Combustion chambers. Monogram Products Co., Inc., Philadelphia, Pa.
Hi-Ef—Filters, heads, separators. Anderson Co., V D., The, Div. of International Basic Economy Corp., Cleveland, O.
Hi-Ex—Roof ventilators. Penn Ventilator Co., Philadelphia, Pa.
Hi-Fax—Plastics, powders and resins. Hercules Powder Co., Wilmington, Del.
High Heat Gray—Paint. Valdura Div., American-Marietta Co., Chicago, Ill.
High Heat Resisting Aluminum—Paint. Valdura Div., American-Marietta Co., Chicago, Ill.
Highlander—Boilers. Industrial Combustion, Inc., Milwaukee, Wis.
Hi-Hopper—Coal and ash conveyors. New London Engineering Co., New London, Wis.
Hilco—Filters. Hillard Corp., Elmira, N. Y.
Hilger—Chillers, unit coolers, unitary air conditioners, valves. XL Refrigerating Co., Chicago, Ill.
Hi-Lift—Pumps. Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.
Hi-Recovery—Heaters. Quiet Automatic Oil Burner Corp., Newark, N. J.
Hi-Red—Expansion anchors. Holub Industries, Inc., Sycamore, Ill.
Hi-Seal—Cement and compounds. Greene, Tweed & Co., North Wales, Pa.
Hi-Seal—Steel tube fittings. Imperial-Eastman Corp., Chicago, Ill.
Hi-Speed—Welding and cutting apparatus, torches. Dockson Corp., Detroit, Mich.
Hitchings—Boilers. Burnham Corp., Irvington, N. Y.
Hi - Temp—Insulation. Carey Mfg. Co., Philip, Cincinnati, O.
Hi-Temp—Protective coatings for metals. Lester Laboratories, Inc., Atlanta, Ga.
Hi-Temp—Insulation cement, refractories & refractory cement. Zonolite Co., Chicago, Ill.
Hi-Temp—Paint. Illinois Bronze Powder Co., Chicago, Ill.

Hi-Value—Adhesive tape. Johns-Manville Corp., New York, N. Y.

Hoffman—Heaters. Clayton & Lambert Mfg. Co., Louisville, Ky.

Hoffman—Draft controls. Salina Metal Products Co., Salina, Kan.

Hole-Shooter—Drills. Milwaukee Electric Tool Corp., Milwaukee, Wis.

Holfast—Industrial adhesive tape. Dayco Corp., Dayton, O.

Holgun—Drills. Black & Decker Mfg. Co., Towson Md.

Hollo-Tech—Doors and panels. Technical Ply-Woods Sales, Chicago, Ill.

Holoflite—Dryers. Western Precipitation Corp., Los Angeles, Calif.

Holtite—Screws. Continental Screw Co., New Bedford, Mass.

Honey-Combe—Dehumidifiers. Cargocaire Engineering Corp., New York, N. Y.

Horton—Tanks. Chicago Bridge & Iron Co., Chicago, Ill.

Hot Shot—Unit coolers. Drayer-Hanson Div., Crane Co., Los Angeles, Calif.

Hot Spot—Preheaters. Rempe Co., Chicago.

Hot Spot—Spot welders. Acme Electric Welder Co., Los Angeles, Calif.

Houghto-Clean—Boiler cleaning compounds. Houghton & Co., E. F., Philadelphia, Pa.

Hovalco—Valves. Homestead Valve Mfg. Co., Coraopolis, Pa.

Howlers—Alarms. Benjamin Electric Mfg. Co., Des Plaines, Ill.

Humiclean—Cleaning compounds, water treatment. Carolina Aniline & Extract Co., Charlotte, N. C.

Humidigraph—Humidistats, hygrometers, indicator-controllers. Bristol Co., Waterbury, Conn.

Humidiguide—Hygrometers. Talyor Instrument Companies, Rochester, N. Y.

Humidomist—Nozzles, humidifiers. Supreme Electric Products Corp., Rochester, N. Y.

Humidostat—Humidistats. Johnson Service Co., Milwaukee, Wis.

Hum-i-dri—Absorption and adsorption dehumidifiers. Speco, Inc., Cleveland, O.

Humiduct—Unitary air conditioners. Bahnson Co., Winston-Salem, N. C.

Humid - U - Stat—Humidistats. Minneapolis-Honeywell Regulator Co., Minneapolis.

Humistat—Humidistats. American Instrument Co., Inc., Silver Spring, Md.

Humi-Temps—Unit air coolers. Larkin Coils, Inc., Atlanta, Ga.

Huron—Baseboard radiation. Farrell Associates Charles, Valencia, Pa.

Hush-A-Duct—Sound absorbers. Korfund Co., Inc., Westbury, L. I., N. Y.

HusHeater—Heaters. Sims Pump Valve Co., Hoboken, N. J.

Hyal—Refractories and refractory cement. Quigley Co., Inc., New York, N. Y.

Hydrafilter—Separators. Wade Mfg. Co., Elgin, Ill.

Hydra-Glide—Cooling towers. Mason Products, Inc., Woburn, Mass.

Hydramotor—Valves. General Controls Co., Glendale, Calif. and Skokie, Ill.

Hydra-Spray—Booths. Griffin & Co., Louisville, Ky.

Hydra-Tube—Dust collectors. Newcomb-Detroit Co., Detroit, Mich.

Hydrecon—Combustion chambers. France Refractories, Co., J. H., Snow Shoe, Pa.

Hydrepair—Clamps. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.

Hydro—Regulators. Duro-Dyne Corp., Farmingdale, L. I., N. Y.

Hydrocast—Refractories and refractory cement. Taylor Sons Co., Charles, Cincinnati, O.

Hydro-Fin—Radiation. Hydrotherm, Inc., Northvale, N. J.

Hydro-Flo—Heaters, heating systems, circulators, regulators. Bell & Gossett Co., Morton Grove, Ill.

Hydro-Foam—Dust collectors. Mahon Co., R. C., Detroit, Mich.

Hydro-Foil—Pumps. Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Los Angeles, Calif.

Hydroguard—Valves. Powers Regulator Co., Skokie, Ill.

Hydro-Jet—Coal and ash conveyors. The Allen-Sherman-Hoff Co., Wynnewood, Pa.

Hydroline—Pumps. Peerless Pump Hydrodynamics Div., Food Machinery and Chemical Corp., Los Angeles, Calif.

Hydro-Lok—Regulators, valves. American Flow Control Corp., Houston, Tex.

Hydron—Bellows. Standard-Thompson Corp., Waltham, Mass.

Hydro-Precipitator—Washers. Johnson-March Corp., Philadelphia, Pa.

Hydrostatic—Connectors. Mechanical Products Corp., Chicago, Ill.

Hydro-Temp—Accumulators. John E. Mitchell Co., Dallas, Tex.

Hydrotex—Sleeve bearings. Gatke Corp., Chicago, Ill.

Hydro-Tite—Pipe joints. Slant-Fin Radiator Corp., Richmond Hill, N. Y.

Hydro-Vac—Coal and ash conveyors. The Allen-Sherman-Hoff Co., Wynnewood, Pa.

Hydro-Vectors—Air conditioning units. Hydrotherm, Inc., Northvale, N. J.

Hydro-Whirl—Dust collectors, spray booths. DeVilbiss Metal Fabricators Co., Detroit, Mich.

Hydryer—Dehumidifiers. Pritchard & Co. of California, J. F., Kansas City, Mo.

Hy-Duty—Blades, propeller fans. Schwitzer Corp., Indianapolis, Ind.

Hy-Gear—Clamps. Ideal Corp., Brooklyn, N. Y.

Hygro-Thermographs—Recorders. Friez Instrument Div., Bendix Corp., Baltimore, Md.

Hylander—Pumps. Bruner Corp., Milwaukee, Wis.

Hy-Line—Unitary air conditioners. Baseline Mfg. Corp. of Fla., St. Petersburg, Fla.

Hypalon—Protective coatings. Saran Lined Pipe Co., Ferndale, Mich.

Hypalon—Protective coatings. Gates Engineering Co., Wilmington, Del.

Hyrate—Refractories. Plibrico Co., Chicago, Ill.

Hyro—Regulators. Duro-Dyne Corp., New Hyde Park, Long Island, N. Y.

Hy-Spar—Caulking and sealing compounds, high temperature paint, enamels and lacquers. Midland Industrial Div., The Harrison Paint & Varnish Co., Canton, O.

Hy-Temp—Cement, insulation. Keasbey & Mattison Co., Ambler, Pa.

Hytempite—Cement, refractories. Quigley Co., Inc., New York, N. Y.

Hy-Test—Heaters. Burnham Corp., Irvington, N. Y.

Hy-Test—Water heaters. Smith Co., Inc., H. B., The, Westfield, Mass.

Hy-Vent—Eliminators, valves. Taco Heaters, Inc., Cranston, R. I.

IMO—Pumps. De Laval Steam Turbine Co., Trenton, N. J.

INS—Torches. Lincoln Electric Co., The, Cleveland, O.

IRCO—Combustion chambers. Lindy Heaters, Inc., Bronx, N. Y.

IVCO—Ventilators. Iona Ventilator Co., Inc., Philadelphia, Pa.

Ice-Cel—Accumulators, chillers. Dole Refrigeration Co., Chicago, Ill.

Ideal—Adhesives, insulation. Taft Jenkins Co., Inc., Holyoke, Mass.

Ideal—Tubing cutters, tube expanders, tools, wrenches. The Gustav Wiedeke Co., Dayton, O.

Ideal—Tools. Boston Machine Works, Co., Lynn, Mass.

Ideal—Traps. Nason Co., Clarkston, Mich.

Idealarc—Welders. The Lincoln Electric Co., Cleveland, O.

IllBronze—Paint. Illinois Bronze Powder Co., Chicago, Ill.

Illco-Matic—Valves. Illinois Water Treatment Co., Rockford, Ill.

Illco-Way—Water filters, water softeners, water treatment. Illinois Water Treatment Co., Rockford, Ill.

Immersatherm—Thermostats. Mercoid Corp., The, Chicago, Ill.

Imperial—Unitary air conditioners. International Metal Products Co., Phoenix, Ariz.

Imperial—Heaters. Payne Company La Puente, Calif.

Impervite—Heads. Falls Industries, Inc., Solon, O.

Impervo—Insulation. Philip Carey Mfg. Co., Cincinnati, O.

Impolene—Plastic tubing. Imperial-Eastman Corp., Chicago, Ill.

Inco—Electrodes, flanges, pipe fittings, pipe, rod, sheets, tubing. International Nickel Co., Inc., The, New York, N. Y.

Inconel—Pipe, fittings, flanges, pipe, sheets, tubing. International Nickel Co., Inc., The, New York, N. Y.

Indeeco—Heaters, preheaters. Industrial Engineering & Equipment Co., St. Louis, Mo.

Indestructible—Gaskets. New York Belting & Packing Co., Passaic, N. J.

Indestructible—Valves. Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.

Indoor-Outdoor—Thermostats. White-Rodgers Co., St. Louis, Mo.

Industrial Air—Furnaces, heaters. Inland Heater Corp., St. Paul, Minn.

IngAclad—Clad sheets. Ingersoll Steel Div., Borg-Warner Corp., Chicago, Ill.

In-Line—Reducers and increasers. Link-Belt Co., Chicago, Ill.

Ins-Lite—Insulation. Insulite Div., Minnesota and Ontario Paper Co., Minneapolis, Minn.

Inspecdor—Doors and panels. Zurn Industries, Inc., Erie, Pa.

Instant—Heaters, preheaters. Johnson Corp., The, Three Rivers, Mich.

Instant Arc—Arc welders. Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.

Instant Glo—Combustion chambers. Boston Machine Works Co., Lynn, Mass.

Instant-Hardner—Compounds. Eutectic Welding Alloys Corp., Flushing, N. Y.

Instant-Vane Rail—Vanes. Cain Mfg. Inc., Birmingham, Ala.

InstOmatic—Couplings. Wiggins Oil Tool Co., Inc., E. B., Los Angeles, Calif.

Inst-O-Verse—Electric motors. Franklin Electric Co., Inc., Bluffton, Ind.

Insulag—Insulation, cement. Quigley Co., Inc., New York, N. Y.

Insulation—Protective coatings. Minnesota Mining & Mfg. Co., St. Paul, Minn.

Insulbrix—Refractories. Quigley Co., Inc., New York, N. Y.

Insulcolor—Vapor barriers. Armstrong Cork Co., Lancaster, Pa.

Insulcrete—Refractories. Quigley Co., Inc., New York, N. Y.

Insulfil—Insulation. Miracle Adhesives Corp., Bellmore, N. Y.

Insulfil—Insulation. Refractory & Insulation Corp., New York, N. Y.

Insulkote—Boiler and tank insulation. Johns-Manville Corp., New York, N. Y.

Insul-Pin—Insulation fasteners, stud welders. Omark Industries, Inc., Portland, Ore.

Insul Pipe—Duct and duct fittings. Coleman Co., Inc., The, Wichita, Kans.

Insulseal—Adhesives. Adhesive Products Corp., New York, N. Y.

Insulseal—Protective coatings. Eagle-Picher Co., Cincinnati, O.

Insul-Stic—Adhesives Eagle-Picher Co., Cincinnati, O.

Insultape—Pipe and tubing insulation. Presstite-Keystone Engineering Products Co., A Div. of American-Marietta Co., St. Louis, Mo.

Integral Jet—Burners. Stout & Sons, David, St. Louis, Mo.

Intensarc—Electrodes. National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.

Interlocked—Packing. Johns-Manville Corp., New York, N. Y.

Inter-Matic—Time switches. International Register Co., Chicago, Ill.

Interwoven—Packing. Greene, Tweed & Co., North Wales, Pa.

Intru-lok—Fittings. Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.

Invisaline—Electric heating panels, baseboard radiation. Arvin Industries, Inc., Columbus, Ind.

Ionaire—Ionization apparatus. Wesix Electric Heater Co., San Francisco, Calif.

Ionizers—Ionization apparatus. Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

Irenew—Valves. Powell Co., Wm., The, Cincinnati, O.

Ironhide—Protective coatings. Pittsburgh Plate Glass Co., Pittsburgh, Pa.

Irontite—Water treatment. Salsbury Corp., Los Angeles, Calif.

Ironweld—Compounds. Rexarc, Inc., West Alexandria, O.

Irv-o-lite—Plastic tubing. Irvington Div., Minnesota Mining & Mfg. Co., Freehold, N. J.

Iso-Finish—Valves. Detroit Stamping Co., Detroit, Mich.

Isomode—Absorbers, bases and pads, vibration isolating. MB Electronics, New Haven, Conn.

Iso-Therm—Water heaters. Schaub Engineering Co., Fred H., Downers Grove, Ill.

Isotron—Refrigerants. American Potash & Chemical Corp., Refrigeration Dept., Los Angeles, Calif.

Isotrons—Refrigerants. Pennsalt Chemicals Corp., Philadelphia, Pa.

Ivco—Roof ventilators. Iona Ventilator Co., Inc., Philadelphia, Pa.

J & C—Burners, fans, furnaces, heaters. Jackson & Church Co., Saginaw, Mich.

JC 60—Cement and compounds. Atlas Mineral Products Co., Mertztown, Pa.

J E—Valves. Jackes-Evans Mfg. Co., St. Louis, Mo.

J & H Customized—Motors. Jack & Heintz, Inc., Cleveland, O.

J & L—Tubing. Jones & Laughlin Steel Corp., Pittsburgh, Pa.

J-M—Bases and pads, cement, tape. Johns-Manville Corp., New York, N. Y.

J M Ball—Traps. Cryer Trap & Valve Div., Encor Corp., Belleville, N. J.

JPS—Bearings. Link-Belt Co., Chicago, Ill.

J-W Gas-Pointer—Leak detectors. Johnson-Williams Inc., Palo Alto, Calif.

J-W Sentinel—Alarms. Johnson-Williams, Inc., Palo Alto, Calif.

Jal-Con-Weld—Steel pipe. Jones & Laughlin Steel Corp., Pittsburgh, Pa.

Jal Duct—Pipe. Jones & Laughlin Steel Corp., Pittsburgh, Pa.

Jal-Jacket—Lined pipe. Jones & Laughlin Steel Corp., Pittsburgh, Pa.

Jal Zinc—Sheets. Jones & Laughlin Steel Corp., Pittsburgh, Pa.

Janitrol—Boilers, burners, heaters, furnaces, unitary air conditioners. Surface Combustion Corp., Toledo, O.

Jarene 8—Tubing Jarrow Products, Inc., Chicago, Ill.

Jeep-A-Trench—Trenching machines. Auburn Machine Works, Inc., Auburn, Neb.

Jennings—Ejectors. Nash Engineering Co., South Norwalk, Conn.

Jenny—Cleaning compounds, pipe cleaning machines. Homestead Valve Mfg. Co., Coraopolis, Pa.

Jet-Flow—Regulators. Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.

Jetglas—Heaters. Day & Night Mfg. Co., La Puente, Calif.

Jet-Hard—Electrodes. The Lincoln Electric Co., Cleveland, O.

Jet-Ignition—Industrial stokers. Babcock & Wilcox Co., The, Boiler Div., Barberton, O.

Jet-Line—Combustion chambers. Grant Wilson, Inc., Chicago, Ill.

Jetolators—Vent flue caps, roof ventilators. Accurate Sheet Metal & Mfg. Wks., Inc., Chicago, Ill.

Jet-O-Matic—Pumps. Goulds Pumps, Inc., Seneca Falls, N. Y.

Jet Power—Gas burners. Auburn Burner Co., Edgerton, O.

Jet Series—Torches, welding and cutting apparatus. Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.

Jet Tube—Systems. McQuay, Inc., Minneapolis, Minn.

Jetweld—Electrodes. Lincoln Electric Co., The, Cleveland, O.

Jiffy—Regulators. Duro-Dyne Corp., Farmingdale, Long Island, N. Y.

Jiffy Clips—Hangers and supports. Minerallac Electric Co., Chicago, Ill.

Jiffy Dampers—Dampers. Duro-Dyne Corp., Farmingdale, Long Island, N. Y.

John Crane—Boiler tube expanders, gaskets, seals, packing. Crane Packing Co., Morton Grove, Ill.

Jointite—Cement and compounds. Arco Co., The, Cleveland, O.

Joint Seal—Cement. Armite Laboratories, Los Angeles, Calif.

Jomanco—Tape. Johns-Manville Corp., New York, N. Y.

Jorgensen—Pipe clamps. Adjustable Clamp Co., Chicago, Ill.

Jubilee—Non-metal hose. New York Belting & Packing Co., Passaic, N. J.

June-Aire—Heating and ventilating systems. American Foundry & Furnace Co., Bloomington, Ill.

Junior—Duct connections, ducts and duct fittings. Duro-Dyne Corp., Farmingdale, L. I., N. Y.

Junior—Radiation. Weil-McLain Co., Michigan City, Ind.

Junior—Ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.

Justrite—Air diffusers, ducts and duct fittings, registers. Corbman Brothers, Inc., Philadelphia, Pa.

K—Fittings and flanges, repair plugs for pipe. Kuhns Brothers Co., Dayton, O.

KAB Kool—Unitary air conditioners. Metal Products Engr., Inc., Los Angeles, Calif.

K-Fin—Cooling and heating surface, tubing. Griscom-Russell Co., Massillon, O.

K-Louver—Sun reflecting louvers. Kawneer Co., Niles, Mich.

K & M—Pipe, adhesive duct tape. Keasbey & Mattison Co., Ambler, Pa.

K and M—Controls, feeders, governors, indicator-controller, regulators, valve operators, strainers, traps, valves. Kieley & Mueller, Inc., Middletown, N. Y.

K-Master—Filters, eleminators, separators, traps. Kaye & MacDonald, Inc., West Orange, N. J.

K-Matic—Electric and pneumatic drills. Gardner-Denver Co., Quincy, Ill.

K-Shield—Boiler and pipe insulation. Robinson Industries, Coleman, Mich.

KX-99—Refractories and refractory cement. Green Fire Brick Co., A.P., Mexico, Mo.

Kable Kord—Belting. New York Belting & Packing Co., Passaic, N. J.

Kamlok—Couplings, fittings. OPW-Jordan Corp., Cincinnati, O.

Kango—Electric hammers. Porter-Cable Machine Co., Syracuse, N. Y.

Kantleak—Pipe couplings, filters, pipe fittings, pipe nipples, valves. Anderson Brass Co., Detroit, Mich.

Kant-twist—Pipe welding clamps. Custanite Corp., Brooklyn, N. Y.

Kaocast—Refractories and refractory cement. Babcock & Wilcox Co., Boiler Div., Barberton, O.

Kaocrete—Refractories and refractory cement. Babcock & Wilcox Co., Boiler Div., Barberton, O.

Kaolight—Refractories and refractory cement. Babcock & Wilcox Co., Boiler Div., Barberton, O.

Kaowool—Refractories and refractory cement. Babcock & Wilcox Co., Boiler Div., Barberton, O.

Karbate—Carbon pipe, heat exchangers, heaters, pumps. National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.

Karbonite—Destroyers. Anderson Chemical Co., Inc., Macon, Ga.

Kast-O-Lite—Refractories & refractory cement. Green Fire Brick Co., A.P., Mexico, Mo.

Kast-Set—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.

Kathabar—Dehumidifiers, unitary air conditioners, humidifiers, air washers. Surface Combustion Corp., Toledo, O.

Kaukit—Caulking and sealing compounds. Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.

Kaylo—Insulation. Owens-Corning Fiberglas Corp., New York, N. Y.

KaytherM—Insulation. Keasbey & Mattison Co., Ambler, Pa.

Kearsarge—Packing, gaskets. Johns-Manville Corp., New York, N. Y.

Kek—Compounds, steam and water treatments. Kenite Laboratory, Madison, N. J.

Kelvinator—Electric plug-in dehumidifiers. Ebco Mfg. Co., Columbus, O.

Kemaloid—Water treatment compounds, boiler cleaning compounds. McMillan Industrial Supplies, C. C., Portland, Ore.

Kem Cati-Coat—Enamels and lacquers. Sherwin-Williams Co., The, Cleveland, O.

Kem Lustral—Enamels and lacquers. Sherwin-Williams Co., The, Cleveland, O.

Ken—Combustion chambers, fittings & bushings. Barclay, Inc., Robert, Chicago, Ill.

Kenbric—Soot destroyers. Kenite Laboratory, Madison, N. J.

Kennison—Nozzles. B-I-F Industries, Builders-Providence Div., Providence, R. I.

Kep-o-seal—Valves. Kepner Products Co., Summit, Ill.

Keps—Nuts and washers, insulation fasteners. Shakeproof Div., Illinois Tool Wks., Elgin, Ill.

Keystone—Packaged steam boiler units. Erie City Iron Wks., Erie, Pa.

Keystone—Gas fired heaters. Bastian-Morley Co., Inc., LaPorte, Ind.

Kidskin—Packing. Darcoid Co., Inc., New York, N. Y.

Kindorf—Bolts, hangers and supports, inserts, racks. Steel City Electric Co., Pittsburgh, Pa.

Kinepack—Burners. Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.

Kinetic—Gas burners. Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.

King—Gages. Oil Equipment Mfg. Corp., New Haven, Conn.

King-clip—Valves. Lunkenheimer Co., Cincinnati, O.

King Fill—Alarms. Oil Equipment Mfg. Corp., New Haven, Conn.

King-Kool—Fans, propeller. Belco Industries, Inc., St. Louis, Mo.

King of Scot—Boilers. National-U. S. Radiator Div., Crane Co., Johnstown, Pa.

Kleen Air—Filters. Kaye & MacDonald, Inc., West Orange, N. J.

Kleenaire—Ventilators. Hudson Mfg. Co., H.D. Chicago, Ill.

Kleenflo—Unit air filters. Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., Cleveland, O.

Kleen Koil—Boiler cleaning compounds. Clayton Mfg. Co. El Monte, Calif.

Kleen-Soot—Soot destroyers. Sterling E. Norcross Co., Bloomfield, N. J.

Klero—Packing. Greene, Tweed & Co., North Wales Pa

Kling Felt—Gaskets, tape. Products Research Co., Burbank, Calif.

Klip-Kupl—Pipe fittings. American Flow Control Corp., Houston, Tex.

Klixon—Regulators, relays, thermostats. Texas Instruments Inc., Metals & Controls Div., Attleboro, Mass.

Klondike—Arc welders, pipe thawers. Fern, Ralph, Scranton, Pa.

Kno-Draft—Air diffusers, grilles, registers, sound and volume control units. Conner Engineering Corp., Danbury, Conn.

Kold Board—Insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.

Kold Wave—Condensers. Heat-Exchangers, Inc., Chicago, Ill.

Koncentrix—Fittings. Special Screw Products, Bedford, O.

Kontrol Motor—Diaphragm valves. Kieley & Mueller, Inc., North Bergen, N. J.

Kooler-Aire—Condensers, unitary air conditioners. U. S. Air Conditioning Corp., Delaware, O.

Kool-Shade—Solar heat resisting screens. Reflectal Corp. Subsid., Borg-Warner Corp., Chicago, Ill.

Kool-Temp—Unitary air conditioners. Midwest Air Conditioning Co., Des Moines, Ia.

Kopr-Kote—Cement and compounds. Jet-Lube, Inc., Burbank, Calif.

Korduct—Underground piping conduits. Johns-Manville Corp., New York, N. Y.

Kor-It—Drills. Hamlin Co., Inc., J. F., San Francisco, Calif.

Korner-King—Tools. R C S Tool Corp., Bloomington, Ill.

Koroseal—Tank linings; plastic pipe; plastic tubing; plastic sheets; pipe couplings; pipe fittings; pipe nipples. Goodrich Industrial Products Co., B. F., Akron, O.

K-Pump—Chemical feeders. Hills-McCanna Co., Chicago, Ill.

Kraloy—Plastic pipe fittings, plastic pipe flanges, plastic pipe and plastic valves. Santa Ana Plastics Div., Rexall Drug & Chemical Corp., Santa Ana, Calif.

Krome Kote—Coatings. Wolfe-Kote Co., Inc., Sheboygan, Wis.

Kromik—Coatings. Sherwin-Williams Co., The, Cleveland, O.

Kromover—Compounds. All-State Welding Alloys Co., Inc., White Plains, N. Y.

Kruzite—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.

Kuchler-Huhn—Shaft seals. Koppers Co., Inc., Metals Products Div., Baltimore, Md.

Kwick-Kupling—Couplings, joints. American Flow Control Corp., Houston, Tex.

Kwik-Bond—Adhesives, insulating cement. Columbia Cement Co., Inc., Brooklyn, N. Y.

Kwikflux—Solder. Special Chemicals Corp., Ossining, N. Y.

Kwik-Kleen—Compounds, scale removal, treatment. North American Mogul Products Co., The, Cleveland, O.

Kwik-way—Regulators. Hart & Cooley Mfg. Co., Holland, Mich.

Kwik-Steam—Boilers. Littleford Bros., Inc., Cincinnati, O.

Kwiky-Dots—Industrial adhesive tape. By-Buk Co., Los Angeles, Calif.

L. A. Line—Motors. Louis Allis Co., The, Milwaukee, Wis.

L & H—Heaters. Thermador Electrical Mfg., Los Angeles, Calif.

LJ-1—Torches. Lincoln Electric Co., The, Cleveland, O.

L & N—Indicators. Leeds & Northrup Co., Philadelphia, Pa.

LPRH—Roof ventilators. American Foundry & Furnace Co., Bloomington, Ill.

Lace-On—Pipe and tubing insulation. Forty-Eight Insulations, Inc., Aurora, Ill.

La-Co—Solder and fluxes. Lake Chemical Co., Chicago, Ill.

Lacquer-Stik—Engraving machines. Lake Chemical Co., Chicago, Ill.

Lagfas—Adhesives. Foster Co., Benjamin, Philadelphia, Pa.

Lagtone—Adhesives, for pipe covering. Foster Co., Benjamin, Philadelphia, Pa.

Laminair-Flo—Ducts and duct fittings. United Sheet Metal Co., Inc., Columbus, O.

LaMont—High temperature water boilers, heaters. International Boiler Works Co., The, East Stroudsburg, Pa.

Landmaco—Pipe cutting machines. Landis Machine Co., Waynesboro, Pa.

Landmark—Unitary air conditioners. Lennox Industries, Inc., Marshalltown, Ia.

Lanhydro—Pipe cutting machines. Landis Machine Co., Waynesboro, Pa.

Larm-Tector—Alarms. Way-Wolff Associates, Inc., Long Island City, N. Y.

Lastiglas—Protective coatings for metals. Bishopric Products Co., Cincinnati, O.

Lattice-Braid—Packing. Garlock, Inc., Palmyra, N. Y.

L Blow—Ventilators. Romla Co., Los Angeles, Calif.

Leader—Stocks and dies. Oster Mfg. Co., Wickliffe, O.

Leader—Water heaters. Day & Night Mfg. Co., La Puente, Calif.

Leadtex—Sheets. Revere Copper & Brass, Inc., New York, N. Y.

Leak Lock—Cement and compounds. Highside Chemicals Inc., Clifton, N. J.

Leak-Tec—Leak testers, and detectors. American Gas & Chemicals, Inc., New York.

Lectric-Aire—Air filters. Radex Corp., Chicago, Ill.

Lectro-Clad—Protective coatings, fittings, pipe, pipe flanges, tank linings, pipe nipples, sheets. Bart Mfg. Inc., Belleville, N. J.

Lectrodryer—Dehumidifiers. Pittsburgh Lectrodryer Div., McGraw-Edison Co., Pittsburgh, Pa.

Lectrofilter—Air filters. Albion Div., McGraw-Edison Co., Albion, Mich.

Led-Plate—Cement and compounds, lubricants. Armite Laboratories, Los Angeles, Calif.

Le-Hi—Hose and tubing clamps, hose to pipe fittings. Hose Accessories Co., Philadelphia, Pa.

Leigh—Roof ventilators. Air Control Products, Inc., Coopersville, Mich.

Leigh Imperial—Metal canopies. Air Control Products, Inc., Coopersville, Mich.

Lekro-Tektor—Electrolytic devices. Marlo Coil Co., St. Louis, Mo.

Lektrik-Air—Ventilators. Hudson Mfg. Co., H.D., Chicago, Ill.

Lektroneal—Tubing. Reading Tube Corp., New York, N. Y.

Lektroseal—Tubing. Reading Tube Corp., New York, N. Y.

Len-Lox—Ducts and Duct Fittings. Lennox Industries, Inc., Marshalltown, Ia.

Leroy—Roof ventilators. Hirschman-Pohle Co., Inc., LeRoy, N. Y.

Lert-A-Larm—Fire extinguishing systems. Miller-Harris Instrument Co., Milwaukee, Wis.

Letheray—Sterilizing air units. Hanovia Lamp Div., Engelhard Hanovia, Inc., Newark, N. J.

Levalarm—Alarms, cut-offs. Reliance Gauge Column Co., Cleveland, O.

Level Eye—Gages, indicators. Phillips & Co., H. A., Chicago, Ill.

Level-Log—Regulators. Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.

Level-Master—Regulators. Sporlan Valve Co., St. Louis, Mo.

Levelometer—Gages. Liquidometer Corp., Long Island City, N. Y.

Levelrator—Indicators, alarms, recorders, regulators, switches. Fischer & Porter Co., Warminster, Pa.

Level-Rite—Vibration isolating bases. Felters Co., The, Boston, Mass.

Level-Set—Regulators. Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.

Level-Tek—Alarms, indicators, switches. Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.

Level-Tel—Alarms, gages, indicators, switches. Aeronautical & Instrument Div., Robertshaw-Fulton Controls, Co., Anaheim, Calif.

Level-Trol—Regulators. Fisher Governor Co., Marshalltown, Ia.

Leveltronic—Alarms. Instruments, Inc., Tulsa, Okla.

Lexan—Plastics, powders and resins. General Electric Co., Chemical Materials Dept., Pittsfield, Mass.

Liberty—Hose. Continental Rubber Wks., Erie, Pa.

Liberty—Packing. Johns-Manville Corp., New York.

Liberty—Ventilators, caps. Penn Ventilator Co., Philadelphia, Pa.

Lift Gate—Gates, lift, for trucks. Anthony Co., Streator, Ill.

Light Loader—Coal and ash conveyors. New London Engineering Co., New London, Wis.

Lightweight Champ—Pipe cutting and threading machines, pipe vise stands. Oster Mfg. Co., Wickliffe, O.

Lignophol—Enamels and lacquers. Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.

Lima—Stokers. Carnes, Inc., John R., Lima, O.

Limit-Load—Centrifugal fans. Buffalo Forge Co., Buffalo, N. Y.

LimiTorque—Valves, valve operators. Philadelphia Gear Corp., King of Prussia, Pa.

Limitrol—Alarms. Barber-Colman Co., Rockford, Ill.

Lincwelder—Welders. Lincoln Electric Co., The, Cleveland, O.

Line-A-Spede—Gear—Motors. Allis Co., Louis, The, Milwaukee, Wis.

Line-Air—Diffusers. Universal Diffuser Corp., Tuckahoe, N. Y.

Lin-E-Aire—Valves. Taylor Instrument Companies, Rochester, N. Y.

Line-Flex—Pipe joints. Techniflex Div., Port Jervis, N. Y.

Line-Flo—Sight glasses for pipe lines, dehydrators. Ansul Chemical Co., Refrigeration Div., Marinette, Wis.

Lineflow—Fans. American-Standard Industrial Div., Detroit, Mich.

Linex—Ventilators. Penn Ventilator Co., Philadelphia, Pa.

Link-Grip—Pipe wrenches. American Machine Wks., Inc., Racine, Wis.

Lin-Lok—Hose. Mic-Lin Co., Maple Shade, N. J.

Linovector—Heating surface, radiation. Vulcan Radiator Co., Hartford, Conn.

Linoventilator—Unit ventilators. Vulcan Radiator Co., Hartford, Conn.

Lipco—Cement lined fittings and pipe. Cement Lined Pipe Co., Lynn, Mass.

Liquid Eye—Sight glasses. Allin Mfg. Co., Chicago, Ill.

Liquid Ice—Water chillers and refrigerating compressors. Cool-Ette, Inc., Detroit, Mich.

Liquid Precipitator—Washers. Johnson-March Corp., Philadelphia, Pa.

Liquidweld—Regulators, torches, welding and cutting apparatus. General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.

Liquid Wrench—Solvent. Radiator Specialty Co., Charlotte, N. C.

Liquidflux—Welding compounds, solder. Rexarc, Inc., West Alexandria, O.

Liqui-Jector—Filters. Selas Corp. of America, Dresher, Pa.

Liqui-Med—Oxygen piping and regulating systems. General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.

Liqui-Seal—Pumps. Johnston Pump Co., A Div. of The Youngstown Sheet & Tube Co., Pasadena, Calif.

Lira—Indicators, recorders. Mine Safety Appliances Co., Pittsburgh, Pa.

Lite Cast—Combustion chambers. Monogram Products Co., Inc., Philadelphia, Pa.

Lite-N-Aire—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.

Lithoform—Protective coatings. Amchem Products, Inc., Ambler, Pa.

Little Beaver—Pumps. Johnston Pump Co., Pasadena, Calif.

Little Blacksmith—Punches, shears. Kidder Mfg. Co., Inc., J. F., Burlington, Vt.

Little Giant—Sump pumps. Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.

Little Giant—Stock and dies. Greenfield Tap & Die Div. of United Greenfield Corp., Greenfield, Mass.

Little Giant—Unit heaters. John J. Nesbitt, Inc., Philadelphia, Pa.

Little Giant—Pipe crimper tools. Pioneer Tool Company, Racine, Wis.

Little Landis—Portable pipe cutting and threading machines. Landis Machine Co., Waynesboro, Pa.

Livermont—Wrenches, tools. Richmont, Inc., Monrovia, Calif.

Lloyd—Solder and fluxes. Johnson Mfg. Co., Inc., Mt. Vernon, Ia.

Lo-Aire—Unit coolers. Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.

Lo-Blast—Burners. Mid-Continent Metal Products Co., Chicago, Ill.

Loc-A-Leek—Clamps. Burlis Products Co., Brooklyn, N. Y.

Lockaire—Insulation. Plastergon Wall Board Co., Buffalo, N. Y.

Lock-Joint—Ducts. Inland Steel Products Co., Milwaukee, Wis.

Lock-O-Ring—Pipe flanges, pipe repair plugs. T. D. Williamson, Inc., Tulsa, Okla.

Lock-O-Seal—Seals. Parker Seal Div. of Parker-Hannifin Corp., Cleveland, O.

Lockseam—Pipe. Naylor Pipe Co., Chicago.

Loctite—Cement and compounds. American Sealants Co., Hartford, Conn.

Lodestar—Hoists. Chisholm-Moore Hoist Div., Columbus McKinnon Corp., Tonawanda, N. Y.

Lo-K—Insulation. Lockport Mills, Inc., Lockport, N. Y.

Lokuts—Insulation fasteners, lock nuts and washers. Shakeproof Div., Illinois Tool Works, Elgin, Ill.

Lolag—Heaters. American Instrument Co., Inc., Silver Spring, Md.

Lo-Line—Cooling towers. Pritchard & Co. of California, J. F., Kansas City, Mo.

Long Life—Hose, packing. Goodall Rubber Co., Trenton, N. J.

Longlife—Coating. Flexrock Co., Philadelphia, Pa.

Longrip—Pipe extractors. Ridge Tool Co., Elyria, O.

Longhorn—Heaters. Hotstream Heater Co., Cleveland, O.

Lonsor—Metallic packing. Newage Industries, Inc., Jenkintown, Pa.

Lo-Set—Stokers. Canton Stoker Corp., Canton, O.

LoShaft—Electric motors. Franklin Electric Co., Inc., Bluffton, Ind.

LoStoker—Stokers. Detroit Stoker Co., Monroe, Mich.

Louvent—Ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.

Louverail—Louvers and shutters. Cain Mfg. Inc., Birmingham, Ala.

Lo-Veyor—Conveyor. Ajax Flexible Coupling Co., Inc., Westfield, N. Y.

Low Amp—Arc welding electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.

Lowcost—Boilers. Murray Iron Works Co., Burlington, Ia.

Low-Line—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.

Lown—Machine. San Angelo Foundry & Machine Co., San Angelo, Tex.

Low Pressure Drop—Strainers. Zurn Industries, Inc., Erie, Pa.

Low Temp—Gas welding rods. Eutectic Welding Alloys Corp., Flushing, N. Y.

Loxin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.

Loxit—Fittings. Scovill Mfg. Co., Waterbury, Conn.

Loxite—Pipe covering adhesives. Xylos Rubber Co., Akron, O.

Lo-X-It-Trivent—Roof ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.

Lub Seal—Caulking and sealing compounds. Midwest Noise Control, Indianapolis, Ind.

Lubritex—Sleeve bearings. Gatke Corp., Chicago, Ill.

Lucite—Plastics, powder and resins. du Pont de Nemours & Co., Inc., E. I., Polychemicals Dept., Wilmington, Del.

Lumetex—High temperature paint for hot surfaces. Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich.

Luminite—Boiler cleaning compounds, soot destroyers, steam system treatment. Warren Refining & Chemical Co., The, Cleveland.

Luncor—Valves. Lunkenheimer Co., Cincinnati, O.

Lupton—Unitary air conditioners. Michael Flynn Mfg. Co., Philadelphia, Pa.

Lusterlite—Insulation. Minnesota & Ontario Paper Co., Insulite Div., Minneapolis.

Luxaire—Heaters, refrigerating condensers. Olsen Mfg. Co., C. A., Elyria, O.

M.B.—Heaters. Montgomery Bros., San Francisco, Calif.

M-Cal—Name plates. Anodyne, Inc., Div. North Shore Nameplate, N. Miami Beach, Fla.

M.E.—Motors. Marathon Electric Mfg. Corp., Wausau, Wis.

M & E—Heaters, tubing. Merchants & Evans Co., Philadelphia, Pa.

M & F—Rubber base enamel. Valdura Div., American-Marietta Co., Chicago, Ill.

M & H—Sheets. Matthiessen & Hegeler Zinc Co., La Salle, Ill.

MIF—Couplings, fittings. Malleable Iron Fittings Co., Branford, Conn.

MKO—Pumps. Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.

M & M—Alarms, cut-offs, feeders, operators, regulators, solenoid and solenoid coils, switches, valves. McDonnell & Miller, Inc., Chicago.

M-R-C—Ball bearings. Marlin-Rockwell Corp., Jamestown, N. Y.

M-Scope—Pipe locators, leak detectors. Fisher Research Laboratory, Inc., Palo Alto, Calif.

M & T Murex—Welders, gas welding rods. Metal & Thermit Corp., Rahway, N. J.

M-VB—Valves. Scovill Mfg. Co., Waterbury, Conn.

MW-One—Cement. Philip Carey Mfg. Co., Cincinnati, O.

MW-50—Cement. Philip Carey Mfg. Co., Cincinnati, O.

Macheta—Fans, fan blades, ventilators. Aerovent Fan Co., Inc., Piqua, O.

Maco-Glas—Treated cloth. Menardi & Co., El Segundo, Calif.

Magic—Cement and compounds. Blue Ridge Talc Co., Inc., Henry, Va.

Magic Carpet—Door controls. Stanley Electric Tools Div., The Stanley Works, New Britain, Conn.

Magic Eye—Sight glasses. Imperial-Eastman Corp., Chicago, Ill.

Magic Eye—Door controls. Stanley Electric Tools Div., The Stanley Works, New Britain, Conn.

Magic Pivot—Electric saws. Cummins Portable Tools, Div. of John Oster Mfg. Co., Milwaukee, Wis.

Magnaflow—Pumps. The Corley Co., Bounton, N. J.

Magna-Tran—Welders. Mid-States Welder Mfg. Co., Chicago, Ill.

Magnefer—Refractories and refractory cement. Basic Inc., Cleveland, O.

Magnehelic—Portable analyzers, gages, kits, manometers, meters, switches, testers, tubes. Dwyer Mfg. Co., F. W., Michigan City, Ind.

Magne Patch—Repair plugs for tanks. Tankit Co., The, Newark, N. J.

Magnetrol—Alarms, boiler cut-offs, switches.

Schaub Engineering Co., Fred H., Downers Grove, Ill.
Magnex—Scale removal. Magnus Chemical Co., Garwood, N. J.
Magni-Chek—Valves. Watsco, Inc., Hialeah, Fla.
Magnilastic—Expansion pipe joints. Cook Electric Co., Chicago, Ill.
Magnorite—Cement, refractories and refractory cement. Norton Co., Worcester, Mass.
Magno-Therm—Analyzers. Hays Corp., The, Michigan City, Ind.
Magnox—Oxygen analyzers. Milton Roy Co., Philadelphia, Pa.
Mainline—Heaters. Electrend Products Corp., St. Joseph, Mich.
Main line—Thermostats. White-Rodgers Co., St. Louis, Mo.
Mainline—Propeller fans. Main Cornice Works, Inc., Los Angeles, Calif.
Mainliner—Fan blades and fans. Burden Co., Alan E., Los Angeles, Calif.
Make-Up-Air—Unit heaters. New York Blower Co., Chicago, Ill.
Malgate—Valves. Powell Co., Wm., The, Cincinnati, O.
Malrenew—Valves. Powell Co., Wm., The, Cincinnati, O.
Manco—Plastic pipe, absorbers. Manufacturers Corp., Mansfield, O.
Manganend—Electrodes. Arcos Corp., Philadelphia, Pa.
Manganweld—Electrodes. Lincoln Electric Co., The, Cleveland, O.
Mangjet—Arc welding electrodes. Lincoln Electric Co., The, Cleveland, O.
Mannattan—Packing. Greene, Tweed & Co., North Wales, Pa.
Mani-Flo—Valve operators. Instruments, Inc., Tulsa, Okla.
Marfaid—Valves. Hays Mfg. Co., Erie, Pa.
Mar-Flex—Joints. Marquette Coppersmithing Co., Philadelphia, Pa.
Mark Time—Time switches. Rhodes, Inc., M. H., Hartford, Conn.
Mark XI—Welders. KSM Products, Inc., Moorestown, N. J.
Mars—Pumps. Solar Aircraft Co., San Diego, Calif.
Marvair—Unitary air conditioners. Muncie Gear Works, Inc., Muncie, Ind.
Marvel—Heaters. Bastian-Morley Co., Inc., La Porte, Ind.
Marvelwite—Enamels and lacquers. Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.
Master—Fittings. Mel Products Co., The, East Haven, Conn.
Master 150#—Unions. Jefferson Union Co., Inc., Lexington, Mass.
Master-Bilt—Pumps. Schaub Engineering Co., Fred H., Downers Grove, Ill.
Masterline—Balancing equipment. Gisholt Machine Co., Madison, Wis.
Masterline—Chemical feeders, pumps. Hills-McCanna Co., Chicago, Ill.
Master Pilot—Valves. Powell Co., Wm., The, Cincinnati, O.
Mastic—Concrete insulation. Poe Co., C. W., The, Cleveland, O.
Maxaw—Electric saws. Cummins Portable Tools, Div. of John Oster Mfg. Co., Milwaukee, Wis.
Maxicorder—Recorders. Dickson Co., Chicago, Ill.
Maximatic—Speed changers. Nason Co., Clarkston, Mich.
Maximon—Gages. Longergan Co., J. E., Philadelphia, Pa.
Maxteam—Boilers. Martin Co., Inc., J. O., San Francisco, Calif.
Maxi-Therm—Furnaces, heaters. Chicago Steel Furnace Co., Elk Grove, Ill.
McGregor—Glasses. Chesterton Co., A. W., Everett, Mass.
Measure Marked—Plastic pipe. Plastex Co., Columbus, O.
Measurrench—Wrenches. Williams & Co., J. H., Buffalo, N. Y.
Mechanipak—Seals. Garlock, Inc., Palmyra, N. Y.
Mechanipak—Mechanical shaft seals. United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J.
Meco—Torches, compounds, flame cutters, leak detectors, gages, regulators, valves, welding rod. Modern Engineering Co., St. Louis, Mo.
Melco—Refrigerating compressors, finned surface, piping oxygen, unitary air conditioners. Melchior, Armstrong, Dessau, Inc., Ridgefield, N. J.
Meletron—Switches. Barksdale Valves, Los Angeles, Calif.
Mercury—Pipe cutting machines, benders, pipe cutting oil, pipe cutters. Obear & Sons, Inc., Inglewood, Calif.
Merrill Process—Heating systems. Parks-Cramer Co., Fitchburg, Mass.
Measurflo—Regulators, valves. Hays Mfg. Co., Erie, Pa.
Metagraphic—Transmitters. Bristol Co., The, Waterbury, Conn.
Metalene—Cleaning compounds. Lester Laboratories, Inc., Atlanta, Ga.
Metal-Fab—Duct connections, ducts and duct fittings. Duro-Dyne Corp., Farmingdale, L. I., N. Y.
Metal-Master—Shears. Wiss & Sons Co., J., Newark, N. J.
Metalset—Caulking and sealing compounds. Smooth-On Mfg. Co., Jersey City, N. J.
Metameter—Transmitters. Bristol Co., The, Waterbury, Conn.
Metermax—Systems. Leeds & Northrup Co., Philadelphia, Pa.
Meteor—Hoists. Chisholm-Moore Hoist Div., Columbus McKinnon Corp., Tonawanda, N. Y.
Metlcap—Vent flue caps, pipe and fittings. Hart and Cooley Mfg. Co., Holland, Mich.
Met-L-Flex—Bases and pads. Robinson Technical Products, Inc., Teterboro, N. J.
Met-L-Tex—Protective coatings. France Refractories Co., J. H., Snow Shoe, Pa.
Metl-Tech—Doors and panels, metal sheets. Technical Ply-Woods Sales, Chicago, Ill.
Metlvent—Pipe and fittings. Hart & Cooley Mfg. Co., Holland, Mich.
Metro Descaler—Cleaning compounds. Metropolitan Refining Co., Inc., Long Island City, N. Y.
Mex-Ko—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Miami—Fans, doors and panels. Philip Carey Mfg. Co., Cincinnati, O.
Mic-O-Float—Valves. Instruments, Inc., Tulsa, Okla.
Micrelay—Controllers and starters, relays. Ebert Electronics Corp., Queens Village, N. Y.
Micretain—Air filters. Cambridge Filter Corp., Syracuse, N. Y.
Micro—Low water cut-offs. Maid-O'-Mist, Inc., Chicago, Ill.
Micro—Valves. Integral Corp., Long Island, N. Y.
Micro-Bar—Insulation. Johns-Manville Corp., New York, N. Y.
Micro-Dri—Refrigerant dehydrators. Wabash Corp., Chicago, Ill.
Microdyne—Dust collectors. Joy Mfg. Co., Pittsburgh, Pa.
Micro-Feed—Humidifiers. Cleveland Humidifier Co., Cleveland, O.
Micro-Feeder—Pumps. B-I-F Industries, Proportioneers Div., Providence, R. I.
Micro-filters—Filters. Selas Corp. of America, Dresher, Pa.
Microflex—Non-metal hose and fittings. Dayco Corp., Dayton, O.
Micro-Flow—Valves. General-American Valve Co., Corona Del Mar, Calif.
Micro-Klean—Filters, strainers. Cuno Engineering Corp., Meriden, Conn.
Microlite—Insulation. Johns-Manville Corp., New York, N. Y.
Micro-Lok—Insulation. Johns-Manville Corp., New York, N. Y.
Micromet—Water treatment, water conditioners. Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh, Pa.
Micro Motors—Motors. Redmond Co., Inc., Owosso, Mich.
Micro-Netic—Feeders. Campbell Co., J. A., Long Beach, Calif.
MicroRold—Sheets. Washington Steel Corp., Washington, Pa.
Micro-Seal #3—Protective coatings. Anderson-Prichard Oil Corp., Oklahoma City, Okla.
Micro-Screen—Filters. Cuno Engineering Corp., Meriden, Conn.
Microsen—Indicators, indicator-controllers, recorders, recorder-controllers, regulators, thermometers. Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.
Microtex—Insulation. Johns-Manville Corp., New York, N. Y.
Microtherm—Thermostats. Barber-Colman Co., Rockford, Ill.
Micro Valve—Valves. Barworth, Inc., Springfield, N. J.
Micro-Weld—Spot welders. Micro Products Co., Chicago, Ill.
Midco—Heaters. Mid-Continent Metal Products Co., Chicago, Ill.
Midget—Radiation. Utica Radiator Corp., Utica, N. Y.
Midget—Float valves. Maid-O'-Mist, Inc., Chicago, Ill.
Midg-O-Matic—Valves. Hays Mfg. Co., Erie, Pa.
Mighty Midget—Drills. Stanley Electric Tools Div., The Stanley Works, New Britain, Conn.
Mighty Mite—Thermostats. Mechanical Industries Production Co., Akron, O.
Mighty-Mite—Fasteners, tools. Remington Arms Co., Inc., Bridgeport, Conn.
Mikro-Collectro—Dust collectors. Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Summit, N. J.
Mikro-Pulsaire—Dust collectors. Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Summit, N. J.
Mikro Rotary Feeder—Feeders. Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Summit, N. J.
Mil-Ac—Air conditioning units. Ellis & Watts Products, Inc., Cincinnati, O.
Milcor—Caps, dampers, pipe and fittings, ducts, doors and panels, hangers and supports, ventilators. Inland Steel Products Co., Milwaukee, Wis.
Milford—Tools. Thompson & Son Co., The Henry G., New Haven, Conn.
Mills—Boilers. Smith Co., Inc., H. B., The, Westfield, Mass.
Milroyal—Indicators, regulators. Milton Roy Co., Philadelphia, Pa.
Mindicator—Gages. Dickson Co., The, Chicago, Ill.
Minditrol—Indicator-controllers. Dickson Co., Chicago, Ill.
Mineralead—Cement and compounds. Atlas Mineral Products Co., Mertztown, Pa.
Minicordes—Recorders. Dickson Co., The, Chicago, Ill.
Minirelay—Controllers and starters, relays, switches. Ebert Electronics Corp., Queens Village, N. Y.
Mipatan—Hammers, tools. Port City Machine & Tool Co., Muskegon, Mich.
Mipco—Valves. Associated Valve Co., North Wales, Pa.
Miracle Anchors—Fasteners. Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y.
Miracle Red—Coatings. Debevoise Co., The, Brooklyn, N. Y.
Mist Enders—Mist collectors. Dustender Co., Ann Arbor, Mich.
Mistkop—Collectors. Aget Mfg. Co., Adrian, Mich.
Mist Master—Mist collectors. Cincinnati Fan & Ventilating Co., Cincinnati, O.
Mixend—Arc welding electrodes. Arcos Corp., Philadelphia, Pa.
Mizzou—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Mkayo—Boilers. Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., Bridgeport, Pa.
Mobilene—Gaskets. Johns-Manville Corp., New York, N. Y.
Mobilgun—Heaters. Miller-Church Industries, Inc., Eaton Rapids, Mich.
Model-F—Wrenches. Richmont, Inc., Monrovia, Calif.
Model Star—Valves. Powell Co., Wm., The, Cincinnati, O.
ModernAire—Fans, unit air conditioners. National Gas Equipment Co., Inc., Denison, Tex.
Modu-Aire—Air conditioning units. U. S. Air Conditioning Corp., Delaware, O.
Moduflow—Control systems. Minneapolis-Honeywell Regulator Co., Minneapolis.
Modulatic—Boilers. Vapor Heating Corp., Chicago, Ill.
Modulectric—Heaters. Vapor Heating Corp., Chicago, Ill.
Modutrol—Heating systems, valve and duct operators. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Modutron—Regulators. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Modu-Wave—Welders. Sciaky Bros., Inc., Chicago, Ill.
Mogul—Packing. Johns-Manville Corp., New York.
Moist-Trol—Valves. Raymanco Mfg. Co., Owatonna, Minn.
Moisture Magnet—Dehumidifiers. Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Moleculor Sieve—Dehydrators. Remco, Inc., Zelienople, Pa.
Molub-Alloy—Valve stem lubricants. Imperial Oil & Grease Co., Los Angeles, Calif.
Moncrief—Heaters. Henry Furnace Co., The, Medina, O.
Monel—Pipe fittings, flanges, pipe, sheets, tubing. International Nickel Co., Inc., The, New York, N. Y.
Monend—Arc welding electrodes. Arcos Corp., Philadelphia, Pa.
Monitor—Boilers. Cleaver-Brooks Co., Milwaukee, Wis.
Monitor—Detectors. Instruments, Inc., Tulsa, Okla.
Monmouth—Humidifiers, valves. Cleveland Humidifier Co., Cleveland, O.
Monobloc—Pumps. Worthington Corp., Harrison, N. J.
Monobolt—Chillers, heat exchangers, oil coolers, water heaters. Graham Mfg. Co., Great Neck, Long Island, N. Y.
Mono-Cast—Pipe. American Cast Iron Pipe Co., Birmingham, Ala.
Monofin—Radiation. Wesix Electric Heater Co., San Francisco, Calif.
Monoflo—Hot water heating systems and fit-

tings. Bell & Gossett Co., Morton Grove, Ill.
Mono Kover—Insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.
Mono-Line—Refractories. Quigley Co., Inc., New York, N. Y.
Mono Motors—Motors. Redmond Co., Inc., Owosso, Mich.
Mono-Peen—Enamels and lacquers, protective coatings. Interchemical Corp., Finishes Div., Newark, N. J.
Monotube—Drives. Link-Belt Co., Chicago, Ill.
Monovent—Ventilators. Burt Mfg. Co., Akron.
Monoweld—Electrodes, arc welding. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Monoxer—Detectors. Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Monoxivent—Fittings. Kent-Moore Organization, Inc., Warren, Mich.
Monsoon—Fans. Jamieson Mfg. Co., Dallas, Texas.
Mor-Aire—Propeller fan blades. Maurey Mfg. Corp., Chicago, Ill.
Morflex—Flexible couplings. Morse Chain Co., Ithaca, N. Y.
Mor-Grip—Drives, V belts. Maurey Mfg. Corp., Chicago, Ill.
Morlex—Steam system treatment. Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Mortite—Gaskets, caulking and sealing compounds, tape. Mortell Co., J. W., Kankakee, Ill.
Motoreducer—Gear—motors. Falk Corp., Milwaukee, Wis.
MotoReducer—Speed reducers. Philadelphia Gear Corp., King of Prussia, Pa.
Motorgear—Gear—motors, reducer and increasers. Link-Belt Co., Chicago, Ill.
Motorstoker—Stokers. Hershey Motorstoker, Manheim, Pa.
Motosteel—Valves. Taylor Instrument Companies, Rochester, N. Y.
Mototrol—Indicator-controllers. Automatic Control Co., St. Paul, Minn.
Mototurb—Ventilators. Uno Ventilator Co., Malden, Mass.
Mouat—Compounds, eliminators, traps. Squires Co., C. E., The, Cleveland, O.
Mounts—Bases and pads. Lord Mfg. Co., Erie, Pa.
Muckle-Vent—Ventilators. Muckle Mfg. Co., Owatonna, Minn.
Mullion-Aire—Unit coolers. Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Mullion Panel—Unit coolers. McQuay, Inc., Minneapolis, Minn.
Mulsifyre—Nozzles. Grinnell Co., Inc., Providence, R. I.
Multalarm—Alarms. Automatic Control Co., St. Paul, Minn.
Multiblade—Welding fume exhausters. General Blower Co., Morton Grove, Ill.
Multiclone—Dust collectors. Western Precipitation Corp., Los Angeles, Calif.
Multi-Cold—Compressors. Multiplex Mfg. Co., Berwick, Pa.
Multi-Duty—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Multi-Duty—Pulleys and sheaves. Gates Rubber Co., The, Denver, Colo.
Multi-Dyne—Collectors. Schneible Co., Claude B., Detroit, Mich.
Multifin—Radiation. American-Standard Plumbing & Heating Div., New York, N. Y.
Multiflex—Ducts and duct fittings. United States Rubber Co., New York, N. Y.
Multiguard—Electric motors. Lincoln Electric Co., The, Cleveland, O.
Multi-Louver—Drives. Link Belt Co., Chicago, Ill.
Multi Mount—Speed reducers. Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.
Multi-Pak—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Multi-Pak—Baseboard radiation. Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Multiplane—Vibration isolating bases. Lord Mfg. Co., Erie, Pa.
Multiport—Valves. Permutit Co., The, A Div. of Pfaudler Permutit, Inc., New York, N. Y.
Multi-Pul—Hoists. Indus Corp., Indianapolis, Ind.
Multi-Seal—Repair plugs. Kenney Co., L. C., Chicago, Ill.
Multi-Shielded—Electric motors. Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.
Multitemp—Boilers. Hydrotherm, Inc., Northvale, N. J.
Multitherm—Air conditioning units. Clarage Fan Co., Kalamazoo, Mich.
Multi-Tip—Gas burners. Dalzen Mfg. Co., St. Clair, Mich
Multitube—Tubing. Crescent Insulated Wire & Cable Co., Trenton, N. J.
Multi-Use—Masonry drills. U. S. Expansion Bolt Co., York, Pa.
Multivane—Fans, blowers. Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.
Multi-V-Drive—Drives. Worthington Corp., Harrison, N. J.
Multi-Wash—Dust collectors, washers. Schneible Co., Claude B., Detroit, Mich.
Multuri—Burners. Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Murex—Welding electrodes. Metal & Thermit Corp., Rahway, N. J.

N-B—Boilers. Nebraska Boiler Co., Inc., Lincoln, Nebr.
NCG—Leak detectors, solder, oxygen systems, welding rod. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
N-M-D—Valves. Lunkenheimer Co., Cincinnati, O.
NYB—Heating surface, heating and ventilating units, blowers, exhauster units, makeup air units, fans, unit heaters. New York Blower Co., Chicago, Ill.
Nail-A-Matic—Tools. Matrix Engineering Corp., Minneapolis, Minn.
Nalco—Solder. National Lead Co., New York.
Namco—Solenoids and solenoid coils. National Acme Co., The, Cleveland, O.
Natick—Hangers and supports, pipe. American Tube & Controls, Inc., West Warwick, R. I.
National Ground Anodes—Devices. National Carbon Co., Div. of Union Carbide Corp., New York, N. Y.
National—Cutters, pipe cutting machines. Wachs Co., E. H., The, Chicago, Ill.
National—Furnaces, heaters. MaGirl Foundry & Furnace Co., Bloomington, Ill.
Natorq—Seals. Navan Products, Inc., El Segundo, Calif.
Natur Temp—Insulation. Plastergon Wall Board Co., Buffalo, N. Y.
Navalon—Fiber packing. Johns-Manville Corp., New York, N. Y.
N.E. Hite—Units. Barclay, Inc., Robert, Chicago, Ill.
Nelex—Electric heating cable. Nelson Electric Mfg. Co., Tulsa, Okla.
Nelson—Stokers, air diffusers, pumps, unitary air conditioners, ventilators. Heating Assurance, Inc., Spokane, Wash.
Nelsonaire—Unit ventilators. Herman Nelson Products, American Air Filter Co., Inc., Louisville, Ky.
Nelweld—Welders. Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, O.
Nemo—Insulating cement. Smith & Kanzler Corp., Linden, N. J.
Neobon—Corrosion shields for pipe joints. Atlas Mineral Products Co., Mertztown, Pa.
Neo Coat—Coatings. Pennsalt Chemicals Corp., Philadelphia, Pa.
Neoprene—Protective coatings. Saran Lined Pipe Co., Ferndale, Mich.
Neo-Shear Mounts—Bases and pads. Vibration Mountings, Inc., Corona, N. Y.
Nerva-Kote—Protective coatings. Rubber and Plastics Compound Co., New York, N. Y.
Nerva-Plast—Protective coatings. Rubber and Plastics Compound Co., New York, N. Y.
Nervatape—Industrial tape. Rubber & Plastics Compound Co., New York, N. Y.
Neutroda—Compounds. Tankit Co., The, Newark, N. J.
New Cyclone—Dust collectors. Kirk & Blum Mfg. Co., Cincinnati, O.
New Port—Pumps. Everite Pump & Mfg. Corp., Lancaster, Pa.
Newport—Air conditioning units. Webster & Co., Warren, Camden, N. J.
Niagara—Meters. Buffalo Meter Co., Inc., Buffalo.
Nibblers—Electric portable shears. Fenway Machine Co., Philadelphia, Pa.
Nibscrews—Insulation fasteners, sheet metal screws. Shakeproof Div., Illinois Tool Works, Elgin, Ill.
Nib-Shear—Power shears. H. A. Mfg. Co., York, Pa.
Nickelend—Electrodes. Arcos Corp., Philadelphia, Pa.
Nickel-Arc—Electrodes. Alloy Rods Co., York, Pa.
Nickend—Electrodes. Arcos Corp., Philadelphia, Pa.
Nicloy—Pipe, tube, tubing. Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Nicuend—Electrodes. Arcos Corp., Philadelphia, Pa.
Nifer—Clad sheets. General Plate Div., Metals & Controls Corp., Attleboro, Mass.
"9000" Arc—Torches. Mid-States Welder Mfg. Co., Chicago, Ill.
Niphos—Protective coatings for metals, pipe fittings, pipe nipples, nickel pipe, tubing. M. L. Sheldon & Co., Inc., New York, N. Y.
NiTectic—Arc welding electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
No Crush—Hose. Ammerman Co., Inc., Stillwater, Minn.
No Drip—Insulation, insulating cement, protective coating, vapor barriers. J. W. Mortell Co., Kankakee, Ill.
No Drip Tape—Pipe insulation, pipe wrap. Mortell Co., J. W., Kankakee, Ill.
Nocordal—Pipe coils, refrigerating condensers, and heat exchangers. Heil Process Equipment Corp., Cleveland, O.
No Flare—Fittings. Flodar Corp., Cleveland, O.
No-Flex—Grilles, registers. Hart & Cooley Mfg. Co., Holland, Mich.
Nofome—Pumps. Ladish Co., Tri-Clover Div., Kenosha, Wis.
No-Mar—Pipe wrenches. Nielsen, Inc., E. V., Stamford, Conn.
Non-Clog—Sewage ejectors and pumps. Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Non-clog—Pipe line strainers. Boylston Steam Specialty Co., Chicago, Ill.
Non-Clogging—Spray nozzles. Link-Belt Co., Chicago, Ill.
Non-Con-Dux—Cement, adhesives, insulation. Grant Wilson, Inc., Chicago, Ill.
Non-Frost—Insulation. Keasbey & Mattison Co., Ambler, Pa.
No-Nox—Absorbers. Beacon Brass Co., Waltham, Mass.
Non-Sweat—Insulation. Keasbey & Mattison Co., Ambler, Pa.
No-Ox-Id—Protective coatings. Dearborn Chemical Co., Chicago, Ill.
No-Ox-Id Wrap—Protective coatings. Dearborn Chemical Co., Chicago, Ill.
Norblo—Dust collectors, fans. Northern Blower Co., Cleveland, O.
Nordensson—Burners. Roberts-Gordon Appliance Corp., Buffalo, N. Y.
Northco—Ventilators. Wood Mfg. Co., A. R., Luverne, Minn.
No-Skive—Non-metal hose and fittings. Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
No-Spat—Welding compounds. Midland Industrial Div., The Harrison Paint & Varnish Co., Canton, O.
No-Thread—Fittings. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Novelon—Protective coatings, tank linings. Ellicott Fabricators, Inc., Baltimore, Md.
No-Vent—Pumps and systems, circulators for hot water heating systems. Stout & Sons, David, St. Louis, Mo.
No Vision—Grilles. Independent Register Co., Cleveland, O.
Novoid—Insulation, adhesives, vibration isolating bases. National Cork Co., Englewood, N. J.
Nu-Air—Adsorbers. Ramick Inc., Bethel Park, Pa.
Nubelac—Enamels and lacquers. The Glidden Co., Midwest Industrial Div., Chicago, Ill.
Nubelite—Enamels and lacquers. The Glidden Co., Midwest Industrial Div., Chicago, Ill.
Nubelite—Protective coatings for metals. Glidden Co., The, Cleveland, O.
Nubeloid—Protective coatings for metals. Glidden Co., The, Cleveland, O.
Nubelyn—Protective coatings for metals. Glidden Co., The, Cleveland, O.
Nullmatic—Gages, indicators, insulation, recorders. Moore Products Co., The, Philadelphia, Pa.
Nu-Notch—Mushroom ventilators, diffusers. Knowles Mushroom Ventilator Co., Inc., Philadelphia, Pa.
Nu-Pon—Protective coatings for metals. Glidden Co., The, Cleveland, O.
Nupon—Enamels and lacquers. The Glidden Co., Midwest Industrial Div., Chicago, Ill.
Nupro—Valves. Nuclear Products Co., Cleveland, O.
Nu-Rail—Pipe fittings. Hollaender Mfg. Co., Cincinnati, O.
NuTwist—Welders. P. R. Mallory & Co., Inc., Indianapolis, Ind.
Nu-Vac—Vacuum cleaners, dust collectors. Empire Chemical Products Co., Newark, N. J.
Nu-Wrap—Insulation. Keasbey & Mattison Co., Ambler, Pa.
Nyavco—Valves, gages. New York Air Valve Corp., Brooklyn, N. Y.
Nylaflex—Non-metal hose and fittings. Dayco Corp., Dayton, O.
Nylaflow—Non-metal hose and fittings. Polymer Corp., The, Reading, Pa.
Nylasint—Plastics, powder and resins. Polymer Corp., Reading, Pa.
Nylatron—Plastics powder and resins. Polymer Corp., Reading, Pa.
Nylobrade—Non-metal hose and fittings. Newage Industries, Inc., Jenkintown, Pa.
Nyio-Flex—Refrigerant charging hose. Techniflex Div., Port Jervis, N. Y.
Nylo-Seal—Plastic tubing. Imperial-Eastman Corp., Chicago, Ill.

OB—Valves. Ohio Brass Co., Mansfield, O.

O-B Equatemp—Valves. Ohio Brass Co., Mansfield, O.

OCH—Filters. American Air Filter Co., Louisville, Ky.

O&S—Burners. Orr & Sembower, Inc., Reading, Pa.

OTC—Tubing benders, chasers, tubing cutters, cylinders, indicating gages, pumps, tools, valves, wrenches. Owatonna Tool Co., Owatonna, Minn.

OX—Sheet metal punches. Duro-Dyne Corp., Long Island, N. Y.

Oasis—Electric plug-in dehumidifiers. Ebco Mfg. Co., Columbus, O.

Odormaster—Air freshening compounds. Aireactor Corp., New York, N. Y.

Ohioan—Heaters. Hotstream Heater Co., Cleveland, O.

Ohmstone—Panel and control boards. Johns-Manville Corp., New York, N. Y.

Oilbuster—Boiler cleaning compounds. Cannon Chemical Co., Inc., Cambridge, Mass.

Oil Foil—Seals, shaft, mechanical. American Felt Co., Glenville, Conn.

Oil-O-Matic—Heaters. Williams Oil-O-Matic Heating Co., Div. of National Union Electric Corp., Columbus, O.

Oiltex—Gaskets. Chicago Gasket Co., Chicago, Ill.

Okay Tred—Leather belting. Houghton & Co., E. F., Philadelphia, Pa.

Ol' Faithful—Humidifiers. Maid-O'-Mist, Inc., Chicago, Ill.

Olympic—Heaters. Western Blower Co., Seattle, Wash.

Omega—Joints. Marquette Coppersmithing Co., Philadelphia, Pa.

Omniguard—Temperature alarms, indicator-controllers. Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., West Orange, N. J.

One-Cote—Insulating cement. Eagle-Picher Co., Cincinnati, O.

"100" Power Drive—Pipe cutting and threading machines. Oster Mfg. Co., Wickliffe, O.

"100" Power Vise—Pipe vise stands. Oster Mfg. Co., Wickliffe, O.

1 Way Weather Flo—Thermostats. Automatic Devices Div. of American Machine & Metals, Inc. Sellersville, Pa.

Opo-Matic—Regulators. Elgen Mfg. Co., Long Island City, N. Y.

Opto-Matic—Oilers. Trico Fuse Mfg. Co., Milwaukee, Wis.

Oriflo—Flanges. B-I-F Industries, Builders-Providence Div., Providence, R. I.

Ori-Flowrator—Flow measuring orifices. Fischer & Porter Co., Warminster, Pa.

"O" Rings—Packing. Linear Inc., Philadelphia, Pa.

Oriseal—Valves. Mueller Co., Decatur, Ill.

Ospho—Protective coatings for metals. Rusticide Products Co., Cleveland, O.

Overust—Protective coatings. Chem Industrial Co., Brooklyn, O.

Oxequip—Oxygen piping and regulating systems. General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.

Oxequip—Oxygen systems, meters, regulators, pumps, valves. Oxygen Equipment & Service Co., Chicago.

Ox-Gem—Treatment. Anderson Chemical Co., Inc., Macon, Ga.

Oxi-Ban—Compounds. Parke-Hill Chemical Corp., Mt. Vernon, N. Y.

Oxweld—Welding rod, electrodes, valves, oxygen piping & regulating systems, torches, solder, welding and cutting apparatus. Linde Co., Div. of Union Carbide Corp., New York, N. Y.

Oxyarc—Welding and cutting apparatus. Arcos Corp., Philadelphia, Pa.

Oxycuttend—Welding and cutting apparatus. Arcos Corp., Philadelphia, Pa.

Oxyleak—Piping leak detectors. Oxygen Equipment & Service Co., Chicago, Ill.

Oyltite-Stik—Cements and compounds. Lake Chemical Co., Chicago, Ill.

Ozafax—Blue print and white print machines. Ozalid Div. of General Aniline & Film Corp., Johnson City, N. Y.

Ozark—Refractories & refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.

Ozite—Insulation. American Hair & Felt Co., Chicago, Ill.

Ozonators—Ozone apparatus. Welsbach Corp., The, Kitson Valve Div., Philadelphia, Pa.

PA 400—Dehydrant and acid neutralizer. W. R. Grace & Co., Davison Chemical Div., Baltimore, Md.

P. B. H.—Cocks, protectors, valves, try cocks. Paul B. Huyette Co., Inc., Philadelphia, Pa.

P-D—Fittings. Sullivan Valve & Engineering Co., Butte, Mont.

P-D—Pumps. DeVilbiss Metal Fabricators Co., Detroit.

PD QC—Pipe machines. Bignall & Keeler Div., John Ramming Machine Co., St. Louis, Mo.

P.E.T.—Drills and motors. Portable Electric Tools, Inc., Geneva, Ill.

PG's—Coils and panels. Anaconda American Brass Co., Waterbury, Conn.

P & H—Arc welders. Harnischfeger Corp., Milwaukee, Wis.

P & H Smootharc—Arc welding electrodes. Harnischfeger Corp., Milwaukee, Wis.

P.I.V. Variable Speed Drive—Changer. Link-Belt Co., Chicago, Ill.

P-K—Eliminators. Patterson-Kelley Co., Inc., The, E. Stroudsburg, Pa.

P-R—Burners. Selas Corp. of America, Dresher, Pa.

PRC Rubber Calk—Caulking and sealing compounds. Products Research Co., Burbank, Calif.

PSC—Regulators, dehumidifiers. Perfecting Service Co., Charlotte, N. C.

PV-Supertemp—Insulation. Eagle-Picher Co., Cincinnati, O.

Pace-King—Boilers. Burnham Corp., Irvington, N. Y.

Pacemaker—Heaters. Payne Co., LaPuente, Calif.

Pacemaker—Softeners. Stover Water Softener Co., St. Charles, Ill.

Pacemakers—Coolers. McQuay, Inc., Minneapolis, Minn.

Pacific—Furnaces, heaters. Rosebraugh Co., W. W., Salem, Ore.

Package-Aire—Unitary air conditioners. U. S. Air Conditioning Corp., Delaware, O.

Packex—Sewage ejectors. Yeomans Bros. Co., Melrose Park, Ill.

Paco—Turbine pumps. Pacific Pumping Co., Oakland, Calif.

Page Sensor—Alarms. Hogart Engineering Co., Los Angeles, Calif.

Paget—Strainers. Self Cleaning Strainer Co., Oak Lawn, Ill.

PAINTGRIP—Sheets. Armco Steel Corp., Middletown, O.

Paintstiks—Identification markers. Markal Co., Chicago, Ill.

Paladin—Enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.

Palco—Packing. Greene, Tweed & Co., North Wales, Pa.

Palcotan—Water treatment. Pacific Lumber Co., The, San Francisco, Calif.

Palco Wool-Saferized—Insulation. Pacific Lumber Co., The, San Francisco, Calif.

Palladrin-Mastic—Tank linings. Emjay Maintenance Engineers, Rutherford, N. J.

Palmetto—Packing, gaskets, shaft seals. Greene, Tweed & Co., North Wales, Pa.

Palmetto G-T Ring—Packing. Greene, Tweed & Co., North Wales, Pa.

Palmetto Super Sheat—Gaskets, packing. Greene, Tweed & Co., North Wales, Pa.

Pandux—Thermometer wells, indicating thermometers. Pacific Transducer Corp., Los Angeles, Calif.

Panelair—Heaters. Payne Company, La Puente, Calif.

Panelbloc—Heaters, radiators. The Bettcher Mfg. Corp., Cleveland, O.

Panelcoil—Coils, dryers, exchangers, heaters, radiation, preheaters. Dean Products, Inc., Brooklyn, N. Y.

Panelouvre—Door grilles. Ventilouvre Co., Inc., Marietta, O.

Panelray—Heaters. Day & Night Mfg. Co., La Puente, Calif.

Panel Track—Baseboard radiation. Embassy Steel Products, Inc., Brooklyn, N. Y.

Paneltrol—Valves. Taco Heaters, Inc., Cranston, R. I.

Panther—Plastic pipes. Western Plastics Corp., Tacoma, Wash.

Papco—Cutters and tools. Penn Brass & Copper Co., Erie, Pa.

Paracoil—Coils, condensers, converters, heaters, leak detectors, oil coolers, exchangers, preheaters, steam traps, pipe nipples, water chillers, aftercoolers, heating units, valves, vaporizers. Davis Engineering Div., Tube Reducing Corp., Wallington, N. J.

Para-flex—Couplings. Dodge Mfg. Corp., Mishawaka, Ind.

Paraflo—Air diffusers. Barber-Colman Co., Rockford, Ill.

Para Heat—Electric heating cable. Essex Wire Corp., Ft. Wayne, Ind.

Parallel Shaft—Reducers and increasers. Link-Belt Co., Chicago, Ill.

Paramount Master—Air conditioning units. Essick Mfg. Co., Los Angeles, Calif.

Parasol—Spray nozzles. Spraying Systems Co., Bellwood, Ill.

Peak-Temp—Heaters. Cleaver-Brooks Co., Milwaukee, Wis.

Peck Carrier—Conveyors. Link-Belt Co., Chicago, Ill.

Peco—Pipe hangers and supports. Producto Electric Corp., New York, N. Y.

Pee Vee Cee—Fittings, hoods, plastic pipe. Atlas Mineral Products Co., Mertztown, Pa.

Pee Vee Seal—Cement and compounds. Atlas Mineral Products Co., Mertztown, Pa.

Peerless—Pipe machines. Bignall & Keeler Div., John Ramming Machine Co., St. Louis, Mo.

Peerless—Direct radiation. American-Standard Plumbing & Heating Div., New York, N. Y.

Pelro—Asbestos packing. Greene, Tweed & Co., North Wales, Pa.

Pemoc—Cleaning compounds. Peters Co., The, Div. of Toledo Paint & Chemical Co., Toledo, O.

Penflex—Hose, flexible, tubing. Pennsylvania Flexible Metallic Tubing Co., Paoli, Pa.

Penflex-Weld—Adsorbers. Pennsylvania Flexible Metallic Tubing Co., Paoli, Pa.

Pennco—Sectional cast iron boilers. Pennsylvania Furnace & Iron Co., Warren, Pa.

Penthouse—Ventilators. Penn Ventilator Co., Philadelphia, Pa.

Penton—Plastics, powders and resins. Hercules Powder Co., Wilmington, Del.

Perchloron—Water and chemical treatment. Pennsalt Chemicals Corp., Philadelphia, Pa.

Percojet—Wall heaters. Electric Heating & Cooling, Inc., Newark, N. J.

Perfecta—Circulators for hot water heating systems. Taco Heaters, Inc., Cranston, R. I.

Perfectaire—Dehumidifiers, fans, furnaces, heaters, louvers and shutters, air conditioning units, ventilators. Air Conditioning Engineering Co., Cambridge, Mass.

Perfection—Plates. Beaton & Cadwell Mfg. Co., New Britain, Conn.

Perfecto—Observation boiler ports, cement. Green Fire Brick Co., A. P., Mexico, Mo.

Perfecto—Insulation. Philip Carey Mfg. Co., Cincinnati, O.

Perflex—Hose. Perfecting Service Co., Charlotte, N. C.

Perfusaire—Diffusers, registers. Auer Register Co., Cleveland, O.

Perimaheat—Radiation. Young Radiator Co., Racine, Wis.

Perma-Clean—Air filters. Buckeye Mfg., Inc., Columbus, O.

Perma-Code—Identification markers, pipe, hole and saddle markers. Brady Co., W. H., Milwaukee, Wis.

Permadine—Protective coatings. Amchem Products, Inc., Ambler, Pa.

Perma-Fan—Condensers. Drayer-Hanson Div., Crane Co., Los Angeles, Calif.

Permagum—Adhesives. Presstite Div., American-Marietta Co., St. Louis, Mo.

Perm-Align—Drills. Cummins Portable Tools, Div. of John Oster Mfg. Co., Milwaukee, Wis.

Permaline—Fittings, fiber pipe, piping conduits. Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.

Permalite—Valves. Harman Equipment Co., Los Angeles, Calif.

Permanent Pyro—Anti-freeze compounds. Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.

Permanite—Plastic pipe, ducts and duct fittings, and valves. Knight Co., Maurice A., Akron, O.

Perma-Top—Radiation. Modine Mfg. Co., Racine, Wis.

Permatower—Cooling towers. Marley Co., The, Kansas City, Mo.

Perma-Trim—Convection type radiation. Modine Mfg. Co., Racine, Wis.

Pero-Klean—Cleaning compounds, treatment. Perolin Co., Inc., The, New York, N. Y.

Pero-Nite—Soot destroyers. Perolin Co., Inc., New York, N. Y.

Pet-Re-Kleen—Treatment. Normal Chemical Co., St. Paul, Minn.

Pet-Re-Nol—Fuel oil treatment to prevent sludge. Normal Chemical Co., St. Paul, Minn.

Pexto—Brakes, punches, shears, wrenches, machines. Peck, Stow & Wilcox Co., Southington, Conn.

Phantom-Dial-o-Vent—Exhaust fittings. National System of Garage Ventilation, Inc., Decatur, Ill.

Phenolex—High temperature paint. Claronex Products, Inc., Brooklyn, N. Y.

Phoson—Solder. United Wire & Supply Corp., Cranston, R. I.

Phos-Trode—Electrodes. Ampco Metal, Inc., Milwaukee, Wis.

Phostube—Solder. All-State Welding Alloys Co., Inc., White Plains, N. Y.

Photoswitch—Switches, door controls. Electronics Corp. of America, Cambridge, Mass.

Pilostat—Flame failure controls. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Pilotair—Valves. Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.

Pilot—Valves. Powell Co., Wm., The, Cincinnati, O.

Pin-Spotter—Stud welders, insulation fasteners. Duro-Dyne Corp., Farmingdale, L. I., N. Y.

Pin-Tite—Fasteners. Taft Jenkins Co., Inc., Holyoke, Mass.

Pioneer—Water softeners. Stover Water Softener Co., St. Charles, Ill.

Pioneer—Thermostats. Crown Controls Co., Inc., New Bremen, O.

Pipeasy—Pipe Cement. Flexrock Co., Philadelphia, Pa.

Pipe Line—Strainers. Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.

Pipeliner—Torches, welding and cutting apparatus. Smith Welding Equipment Corp., Minneapolis, Minn.

Pipemaster—Wrenches, pipe vise stands, pipe cutters and vises. Erie Tool Wks., Erie, Pa.

Pipe-Mate—Pipe fittings, pipe flanges. Tube Turns Div. of Chemetron Corp., Louisville, Ky.

Pipe-Saver—Pipe repair clamps. Adams Pipe Repair Products, So. El Monte, Calif.

Pipetite-Stik—Cements and compounds. Lake Chemical Co., Chicago, Ill.

Pipewrap—Pipe insulation. Pittsburgh Plate Glass Co., Pittsburgh, Pa.

Pistonair—Motors. Joy Mfg. Co., Pittsburgh, Pa.

Pitchlign—Roller bearings. Roller Bearing Co. of America, West Trenton, N. J.

Pittsburgh-National—Meters. Rockwell Mfg. Co., Meter & Valve Div., Pittsburgh, Pa.

Placewel—Concrete densifiers. Johns-Manville Corp., New York, N. Y.

Plain—Radiation. Vapor Heating Corp., Chicago, Ill.

Planeweld—Electrodes. Lincoln Electric Co., The, Cleveland, O.

Plan-Pak—Motor controllers and starters. Automatic Control Co., St. Paul, Minn.

Plascene—Wire. Chester Cable Corp., Subsid. of Tennessee Corp., Chester, N. Y.

Plas-Dux—Caulking and sealing compounds. Babbitt Chemical Co., New Bedford, Mass.

Plasgon—Cement and compounds. Samuel Cabot, Inc., Boston, Mass.

Plaskon—Plastics, powders and resins. Allied Chemical Corp., Plastics Div., New York, N. Y.

Plast-A-Chrome—Belting. Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.

Plastic Gasket—Pipe cement. Flexrock Co., Philadelphia, Pa.

Plastic Mastic—Caulking and sealing compounds, repair kits. Williamson Adhesives, Inc., Skokie, Ill.

Plasticord—Wiring. Chester Cable Corp., Subsid. of Tennessee Corp., Chester, N. Y.

Plasticore—Wire. Chester Cable Corp., Subsid. of Tennessee Corp., Chester, N. Y.

Plasticote—Electric wire. Chester Cable Corp., Subsid. of Tennessee Corp., Chester, N. Y.

Plastilock—Adhesives. Goodrich Industrial Products Co., B. F., Akron, O.

Plastimode—Sheets. Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, Los Angeles, Calif.

Plastograph—Viscometers. Brabender Corp., Rochelle Park, N. J.

Plastoid—Furnace cement, caulking & sealing compounds. Plastic Products Co., Detroit, Mich.

Plasturbo—Blower wheels. Mamco Corp., Racine, Wis.

Pla-Tank—Ducts and duct fittings, plastic sheets, plastic tubing. Haveg Industries, Inc., Wilmington, Del.

Platecoils—Coils and radiation, exchangers, heaters, finned surface, superheaters. Tranter Mfg., Inc., Lansing, Mich.

Plateform—Vibration isolating bases. Lord Mfg. Co., Erie, Pa.

Plica—Hose, tubing. Flexaust Co., New York, N. Y.

Plicast—Refractories. Plibrico Co., Chicago, Ill.

Plidco-Flanges—Fittings, flanges. Pipe Line Development Co., Cleveland, O.

Pliogard—Protective coatings. Saran Lined Pipe Co., Ferndale, Mich.

Pliotron—Filters. Goodyear Tire & Rubber Co., Akron, O.

Plisulate—Insulating cement and insulation. Plibrico Co., Chicago.

Plumber Krak-Stik—Cement and compounds. Lake Chemical Co., Chicago, Ill.

Pluralloy—Electrodes. McKay Co., Pittsburgh, Pa.

Pluto-Blue Asbestos—Packing. North American Asbestos Corp., Chicago, Ill.

Ply-Tech—Plywood sheets and board. Technical Ply-Woods Sales, Chicago, Ill.

Pneumadiesel—Air compressors. Schramm, Inc., West Chester, Pa.

Pneumapower—Air compressors. Schramm, Inc., West Chester, Pa.

Pneumastat—Aftercoolers. Schramm, Inc., West Chester, Pa.

Pneumatractor—Aftercoolers. Schramm, Inc., West Chester, Pa.

Pneumavalve—Duct dampers. Connor Engineering Corp., Danbury, Conn.

Pneu-Pump—Pumps. Yeomans Bros. Co., Melrose Park, Ill.

Poe—Exhaust heads for pipe lines, separators, saddle tees. Canton Stoker Corp., Canton, O.

Poeco—Insulation, coatings, concrete insulating. Poe Co., C. W., Cleveland, O.

Polar Pak—Air conditioning units. Coleman Co., Inc., The, Wichita, Kans.

Polar Prince—Unitary air conditioners. Coleman Co., Inc., Wichita, Kans.

Polartron—Relays, regulators, systems, switches. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Pollux—Meters, recorder-totalizers. Air-Conditioning Equipment Corp., New York, N. Y.

Polyfax—Protective coatings, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.

Poly-Flo—Plastic tubing. Imperial-Eastman Corp., Chicago, Ill.

Polymerin—Protective coatings, enamel and lacquers. International Corp., Finishes Div., Newark, N. J.

Polypenco—Plastic pipe, hose and tubing clamps, tubing. Polymer Corp., The, Reading, Pa.

Poly-Plus Blue—Pipe fittings. Union Malleable Mfg. Co., Ashland, O.

Polyprene—Protective coatings, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.

Polystix—Adhesives. Adhesive Products Corp., New York, N. Y.

Polytherm—Protective coatings, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.

Poly-V—V belt drives. Raybestos-Manhattan, Inc., Passaic, N. J.

Polyweld—Adhesives for pipe covering. Sci-eff-ec Labs., Chagrin Falls, O.

Pony—Pipe clamps. Adjustable Clamp Co., Chicago, Ill.

Popular Stillson—Wrenches. Trimont Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.

Poro-Klean—Filters. Cuno Engineering Corp., Meriden, Conn.

Poronze—Filters and porous metals. Wabash Corp., Chicago, Ill.

Poro-Stone—Filters, dehumidifiers. Adams Co., Inc., R. P., Buffalo, N. Y.

Portaflare—Tools. Parker Fittings & Hose Div., Parker-Hannifin Corp., Cleveland, O.

Porta-Heet—Heaters. Auburn Burner Co., Auburn, Ind.

Port-A-Pony—Pipe cutting machines. Thread-Ezy Mfg. Co., Corunna, Mich.

Porta Drive—Pipe cutting machines. Muncie Gear Wks., Inc., Muncie, Ind.

Porta-Lift—Portable hoists. Coffing Hoist Div., Duff Norton Co., Charlotte, N. C.

Porto-Power—Pipe benders and pipe pushers, pumps, punches. Blackhawk Mfg. Co., Milwaukee, Wis.

Porto Shears—Shears. Black & Decker Mfg. Co., Towson, Md.

Portovent—Hose, duct connections, ducts and duct fittings. Flexaust Co., New York, N. Y.

Positive Arc—Arc welders. Welding Apparatus Co., Chicago, Ill.

Power—Belting. Rhoads & Sons, J. E., Wilmington, Del.

Poweraire—Furnaces. Jackson & Church Co., Saginaw, Mich.

Powerated—Furnaces. Jackson & Church Co., Saginaw, Mich.

Powered Low-Line—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.

Powered Valvent—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.

Power-Flow—Ventilators. DeBothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.

Power Gems—Boilers. Edge Moor Iron Works, Inc., Edge Moor, Del.

Power King—Belts. Goodall Rubber Co., Trenton, N. J.

Powermaster—Fans. Acme Engineering & Mfg. Corp., Muskogee, Okla.

Power Master—Boilers. Orr & Sembower, Inc., Reading, Pa.

Power-Mate—Fasteners, tools. Remington Arms Co., Inc., Bridgeport, Conn.

Poweroil—Oil burners. Jackson & Church Co., Saginaw, Mich.

Power-Pak—Boilers. Orr & Sembower, Inc., Reading, Pa.

Power Plant—Pumps. Schaub Engineering Co., Fred H., Downers Grove, Ill.

Power-Tran—Welders. Mid-States Welder Mfg. Co., Chicago, Ill.

Power Vane CP—Drills, motors. Chicago Pneumatic Tool Co., New York, N. Y.

Power vent—Roof ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.

Powrdraulic—Cylinders. Hanna Engineering Wks., Chicago, Ill.

Powrmation—Cylinders. Hanna Engineering Wks., Chicago, Ill.

Poxyglas—Tanks, process and storage. Black, Sivalls & Bryson, Inc., Kansas City, Mo.

Praetorian—Unit ventilators. Valveblower Co. of Calif., Santa Fe Springs, Calif.

Prasco—Insulation, insulating cement. Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., San Francisco, Calif.

Pre-Bilt—Conveyors. Link-Belt Co., Chicago, Ill.

Precision—Nozzles. Benjamin Air Rifle Co., St. Louis, Mo.

Pre-Fab-Ric—Connections. Cain Mfg. Inc., Birmingham, Ala.

Pre-Krete—Coatings, tank linings. Patterson-Kelley Co., Inc., The, E. Stroudsburg, Pa.

Premier—Welding rod. American Steel & Wire Div., United States Steel Corp., Cleveland, O.

Prep—Protective coatings for metals. Neilson Chemical Co., Detroit (Ferndale), Mich.

Presslok—Nylon pipe fittings. Nylon Molding Corp., Garwood, N. J.

Presst-O-Cel—Pipe and tubing insulation. Presstite Div., American-Marietta Co., St. Louis, Mo.

Pressure Clix—Switches. Nason Co., Clarkston, Mich.

Pressure-Speed—Parts for heating and air conditioning equipment. Refrigeration Devices Co., Nutley, N. J.

Pressuretrol — Switches. Minneapolis-Honeywell Regulator Co., Minneapolis.

Pressurmite—Switches. Friez Instrument Div., Bendix Corp., Towson, Baltimore, Md.

Presto—Water softeners. Norwood Products Co., Div. A. R. Wood Mfg. Co., Luverne, Minn.

Presto—Water softeners. Wood Mfg. Co., A. R., Luverne, Minn.

Prest-O-Lite—Leak detectors, torches, welding and cutting apparatus. Linde Co., Div. of Union Carbide Corp., New York, N. Y.

Presto-Lock—Couplings. Smith Bros. Co., Oak Park, Ill.

PreSwitch—Switches. Longergan Co., J. E., Philadelphia. Pa.

Prime-Flow—Pumps. Goulds Pumps, Inc., Seneca Falls, N. Y.

Princo—Gages, alarms, hygrometers, manometers, psychrometers, regulators, relays, thermometers. Precision Thermometer and Instrument Co., Philadelphia, Pa.

Pro-Fax—Plastics, powders and resins. Hercules Powder Co., Wilmington, Del.

Progress—Boilers. Cleaver-Brooks Co., Milwaukee. Wis.

Propairlator—Roof ventilators. Clarage Fan Co., Kalamazoo, Mich.

Propeloflo—Meters. B-I-F Industries, Builders-Providence Div., Providence, R. I.

Prop R Temp—Water chillers, unitary air conditioners. Typhoon Heat Pump Div., Hupp Corp., Tampa, Fla.

Protectal—Boards, panel and control; combustion control systems. Protection Controls, Inc., Skokie, Ill.

Protectofier—Flame failure controls. Protection Controls, Inc., Skokie, Ill.

Protectoglo—Controls. Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia, Pa.

Protectomotor—Air filter separators. Dollinger Corp., Rochester, N. Y.

Protectorelay—Flame failure controls, relays, Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Protekto-Flex—Insulation. Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y.

Protektinsul—Protective coatings. Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y.

Pryzoak—Belting. Graton & Knight Co., Worcester, Mass.

Psychron—Psychrometers. Friez Instrument Div., Bendix Corp., Baltimore, Md.

Pubco—Valves. California Brass Mfg. Co., Los Angeles, Calif.

Pubco Bronze—Valves. California Brass Mfg. Co., Los Angeles, Calif.

Pul Air—Ventilators. Penn Ventilator Co., Philadelphia, Pa.

Pul-Air Ridge—Ventilators. Penn Ventilator Co., Philadelphia, Pa.

Pulling—Circulators, pumps. Columbus Steam Pump Works Co., Columbus, O.

Pulsafeeder—Pumps. Lapp Insulator Co., LeRoy, N. Y.

Pulsatherm—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Pump-A-Matic—Sump pumps. Reif-Rexoil, Inc., Buffalo, N. Y.

Pump King—Pumps. Ladish Co., Tri-Clover Div., Kenosha, Wis.

Punkah Louvres—Air diffusers. Thermotank, Inc., Air Products Div., Detroit, Mich.

Puraflo—Filters, separators. Harman Equipment Co., Los Angeles, Calif.

PurAir—Adsorbers, air filters, air sterilizing units, ventilators. Barnebey-Cheney Co., Columbus, O.

Purj-All—Compounds. Lindy Heaters, Inc., Bronx, N. Y.

Purox—Welding and cutting apparatus, torches. Linde Co., Div. of Union Carbide Corp., New York, N. Y.

Push-Lok—Hose. Parker Fittings & Hose Div., Parker-Hannifin Corp., Cleveland, O.

Pushomatic—Couplings. Perfecting Service Co., Charlotte, N. C.

Push-pull—Couplings. Aeroquip, Inc., Van Wert, O.

Pylets—Switches, pilot and signal lights. Pyle-National Co., The, Chicago, Ill.

Pyramid—Packing. Greene, Tweed & Co., North Wales, Pa.

Pyratherm—Controls. Mercoid Corp., The, Chicago, Ill.

Pyrex—Glass pipe, electric heating panels, heaters, thermometer wells, heat exchangers, gage and sight glasses, valves. Corning Glass Wks., Corning, N. Y.

Pyro—Radiometers. Pyrometer Instrument Co., Inc., Bergenfield, N. J.

Pyrocouple—Thermometers. Royco Instruments, Palo Alto, Calif.

Pyroflex—Coatings, tank linings, lined pipes, tanks, enamels and lacquers. Knight Co., Maurice A., Akron, O.

Pyrojector—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.

Pyroport—Roof ventilators. Penn Ventilator Co., Philadelphia, Pa.

Pyroprobes—Thermometers. Royco Instruments, Palo Alto, Calif.

Pyrotac—Alarms. Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.

Pyrotemps—Thermometers. Royco Instruments, Palo Alto, Calif.

Pyrotrol—Flame failure controls. Bristol Co., The, Waterbury, Conn.

Pyrotron—Recorders. Bailey Meter Co., Cleveland, O.

Pyrovisor—Controls. Bristol Co., The, Waterbury, Conn.

QS—Pulleys and sheaves. Worthington Corp., Harrison, N. J.

QSV—Couplings. Dahl Co., Inc., G. W., Bristol, R. I.

QS—Separators, drains, eliminators. Quality Specialty Co., Inc., Camden, N. J.

Q-T—Sheets and Boards, non-metallic. Celotex Corp., The, Chicago, Ill.

Q-T Ductliner—Insulation, absorbers. Celotex Corp., The, Chicago, Ill.

Q-Chromastic—Refractories. Quigley Co., Inc., New York, N. Y.

Q-Chrome—Refractories. Quigley Co., Inc., New York, N. Y.

Q-Pak—Heaters. Black, Sivalls & Bryson, Inc., Kansas City, Mo.

Q-Seal—Cement. Quigley Co., Inc., New York, N. Y.

Q-Seal-Damit—Boiler sealing compounds. Quigley Co., Inc., New York, N. Y.

Quaker—Heaters. Mor-Flo Heater Corp., Cleveland, O.

Quantrol—Vanes. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.

Quartzoid—Sprinkler heads. Grinnell Co., Inc., Providence, R. I.

Queen of Scot—Boilers. National-U.S. Radiator Div., Crane Co., Johnstown, Pa.

Quick Action—Holders and files. Geneva Mfg. Co., South Elgin, Ill.

Quick-as-Wink—Valves. Hunt Valve Co., Div. of IBEC, Salem, O.

Quick-Seal—Couplings. Titeflex, Inc., Springfield, Mass.

Quiet Duct—Sound absorbers. Industrial Acoustics Co., Inc., New York, N. Y.

Quiet-Flex—Absorbers, hose, noise elimination for cooling towers, joints. Vibration Mountings & Controls, Inc., Corona, N. Y.

Quiet Kool—Unitary air conditions. Emerson Radio & Phono Corp., Jersey City, N. J.

Quiet Vent—Sound absorbers. Industrial Acoustics Co., Inc., New York, N. Y.

Quik-Clamp—Spray nozzles. Link-Belt Co., Chicago, Ill.

Quik-Flex—Steam traps. Anderson Co., D. V., The, Div. of International Basic Economy Corp., Cleveland, O.

Quik Heter—Electric heating panels. Adam Electric Co., Frank, St. Louis, Mo.

Quik-Kote—Insulation. Grant Wilson, Inc., Chicago, Ill.

Quik-Lift—Portable hoists. Coffing Hoist Div., Duff-Norton Co., Charlotte, N. C.

Quik-Mask—Gaskets. Brady Co., W. H., Milwaukee, Wis.

Quik-Plates—Nameplates. Brady Co., W. H., Milwaukee, Wis.

Quik-Set—Insulation, insulating cement. Forty-Eight Insulations, Inc., Aurora, Ill.

Quik-Temp—Steam traps. Schaub Engineering Co., Fred H., Downers Grove, Ill.

RBC—Roller bearings. Roller Bearing Co. of America, West Trenton, N. J.

RB Bases—Noise elimination for cooling towers. Vibration Mountings & Controls, Inc., Corona, N. Y.

RB Integral Fan Bases—Bases and pads. Vibration Mountings & Controls, Inc., Corona, N. Y.

RB Pressure—Pressure blowers. Western Blower Co., Seattle, Wash.

RB Vibration Rails—Bases and pads. Vibration Mountings & Controls, Inc., Corona, N. Y.

R & G—Grilles, registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.

RH—Unitary air conditioners. McQuay, Inc., Minneapolis, Minn.

RHB Hanger—Absorbers, hangers. Vibration Mountings & Controls, Inc., Corona, N. Y.

R. I.—Unions. Rhode Island Fittings Co., Providence, R. I.

R & I—Cement, insulation, refractories and refractory cement. Refractory & Insulation Corp., New York, N. Y.

R & I Moldit Castables—Refractories and refractory cement. Refractory & Insulation Corp., New York, N. Y.

R & I Super #3000—Refractories and refractory cement. Refractory & Insulation Corp., New York, N. Y.

R-K—Regulators, valves. Ruggles-Klingemann Mfg. Co., Boston, Mass.

R-M—Packing, belts, pipe joints, rubber tubing. Raybestos-Manhattan, Inc., Passaic, N. J.

R & M—Portable hoists. Robbins & Myers, Inc., Springfield, O.

R & M All-Weather—Motors. Robbins & Myers, Inc., Springfield, O.

R & M Moyno—Pumps. Robbins & Meyers, Inc., Springfield, O.

RP—Air filters. Research Products Corp., Madison, Wis.

RP Aprilaire—Humidifiers. Research Products Corp., Madison, Wis.

RP Grease—Air grease filters. Research Products Corp., Madison, Wis.

RP Industrial—Air filters. Research Products Corp., Madison, Wis.

RP Super Filter Coat—Oils. Research Products Corp., Madison, Wis.

RP Trim to Size—Air filters. Research Products Corp., Madison, Wis.

R/S Controls—Valves. Refrigerating Specialties Co., Chicago, Ill.

RSH Hanger—Absorbers, hangers. Vibration Mountings & Controls, Inc., Corona, N. Y.

"R-Z-U" Jr.—Boilers. Fitzgibbons Boiler Co., Inc., New York, N. Y.

Rackmaster—Pipe fittings. Hollaender Mfg. Co., Cincinnati, O.

Racon Boilers—Heaters. Radiant Heat & Cooling Corp., Santa Clara, Calif.

Racon Kit—Coils and panels. Radiant Heat & Cooling Corp., Santa Clara, Calif.

Radiafin—Finned tubing, finned surface. Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.

Radial—Unit coolers. McQuay, Inc., Minneapolis, Minn.

Radial-Aire—Unit coolers. Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.

Radiant—Direct radiation. Burnham Corp., Irvington, N. Y.

Radiant—Direct radiation. Utica Radiator Corp., Utica, N. Y.

Radiant Baseboard—Radiation. National-U.S. Radiator Div., Crane Co., Johnstown, Pa.

Radiantrim—Radiation. American-Standard Plumbing & Heating Div., New York, N. Y.

RadiaVector—Radiation. Dunkirk Radiator Corp., Dunkirk, N. Y.

Radi-Heator—Heaters. Summit Products Co., Uniontown, Pa.

Radiox—Fan housings. Torrington Mfg. Co., The, Torrington, Conn.

Radolite—Cement, refractories. Pyrolite Products Co., Cleveland, O.

Rador—Thermostats. Vapor Heating Corp., Chicago, Ill.

Rajah—Packing. Johns-Manville Corp., New York, N. Y.

Ramiclase—Refractories and refractory cement. Basic Inc., Cleveland, O.

Ramset—Refractories and refractory cement. Basic Inc., Cleveland, O.

Ramex—Drills, regulators, tools. Nielsen, Inc., E. V., Stamford, Conn.

Ranarex—Analyzers, indicators, recorders. Permutit Co., A Div. of Pfaudler Permutit, Inc., New York, N. Y.

Rancho—Propeller fans. Belco Industries, Inc., St. Louis, Mo.

Rangaire—Refrigerating condensers, unitary air conditioners. Cobell Industries, Inc., Cleburne, Tex.

Range—Air filters. American Air Filter Co., Inc., Louisville, Ky.

Rangefinder—Transmitters. Automatic Control Co., St. Paul, Minn.

Rannex—Indicators. Permutit Co., The, A. Div. of Pfaudler Permutit, Inc., New York, N. Y.

Rapiduction—Pipe cutting machines. Oster Mfg. Co., Wickliffe, O.

Rapiduction Jr.—Pipe cutting and threading machines. Oster Mfg. Co., Wickliffe, O.

Ratex—Speed changers. Custanite Corp., Brooklyn, N. Y.

Ratiomotor—Gear—motors. Boston Gear Works, Quincy, Mass.

Ratogate—Valves. Fischer & Porter Co., Warminster, Pa.

Ratosight—Alarms, flow switches. Fischer & Porter Co., Warminster, Pa.

Ray-Bond—Adhesives for insulation other than pipe. Raybestos-Manhattan, Inc., Passaic, N. J.

Raydiant—Radiation. Weil-McLain Co., Michigan City, Ind.

Rayduct—Pipe. Bethlehem Steel Co., Bethlehem, Pa.

Ray-Vec—Electric heating panels. Electrend Products Corp., St. Joseph, Mich.

Reactivator—Water softeners. Graver Water Conditioning Co., New York, N. Y.

Readi-Fin—Tubing. Reading Tube Corp., New York, N. Y.

Ready Heat—Electric heating cable. Cox & Co., Inc., New York, N. Y.

Ready-Pack—Clamps. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.

Realwear—Pumps. Warren Pumps, Inc., Warren, Mass.

Recipro Saw—Electric portable saws. Skil Corp., Chicago, Ill.

Recirculator—Pumps. Watkins Co., J. E., Maywood, Ill.

Reco—Steam convertors, heat exchangers, headers, heaters, preheaters, tanks, fuel economizers, separators. Richmond Engineering Co., Richmond, Va.

Reco—Controllers and starters, motors, coils, water filters, switches. Reynolds Electric Co., River Grove. Ill.

Reco-Radi-Aire—Fans. Reynolds Electric Co., River Grove, Ill.

Record-O-Stat—Recorder-controllers. Johnson Service Co., Milwaukee, Wis.

Rectilinear—Burners. Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.

Red-Band—Pipe nipples. Star Tubular Products Co., Chicago, Ill.

Red Cap—Ventilators. Warner Ventilator Co., La Grange, Ind.

Red D Heat—Electric heating cable. Essex Wire Corp., Ft. Wayne, Ind.

Red Devil—Adhesives, furnace, and pipe joint cement. Pecora Inc., Philadelphia, Pa.

Red Diamond—Refrigerants, welders. General Dynamics Corp., Liquid Carbonic Div., Chicago, Ill.

Red Head—Tongs. Billings & Spencer Co., Hartford, Conn.

Redi-Bends—Coils. Capitol Mfg. Co., Div. of Harsco Corp., Columbus, O.

Redi-Return—Pumps. American-Marsh Pumps, Inc., Battle Creek, Mich.

Redi-Spot Gun—Spot welders. Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.

Redi-Vac—Pumps. American-Marsh Pumps, Inc., Battle Creek, Mich.

Red-Reading-Mercury—Hygrometers, psychrometers, thermometers. Palmer Thermometers, Inc., Cincinnati, O.

Red Socket—Wrenches. Lowell Wrench Co., Worcester, Mass.

Red Top—Thermostats. H-B Instrument Co., Philadelphia, Pa.

Red Top—Insulation. United States Gypsum Co., Chicago, Ill.

Red Top—Hangers and supports. Leibfried Mfg. Corp., C. H., Brooklyn, N. Y.

Red Top—Valves. Beacon Brass Co., Waltham, Mass.

Reductors—Reducers. Boston Gear Works, Quincy, Mass.

Redycote—Coatings. Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga.

Refrak—Burners. Selas Corp. of America, Dresher, Pa.

Refrigerated Kooler-Aire—Unitary air conditioners. U. S. Air Conditioning Corp., Delaware, O.

Refrigifilter—Refrigerant dehydrators, filters. Hankison Corp., Canonsburg, Pa.

Regent—Heaters. Electrend Products Corp., St. Joseph, Mich.

Rego—Regulators, torches, welding and cutting apparatus. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.

ReGalv—Coatings. Rotometals, San Francisco, Calif.

Relatrol—Heating systems. Automatic Timing & Controls, Inc., King of Prussia, Pa.

Reliance—Belting, packing. Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.

Reliance—Filters and regulators. American Meter Co., Inc., Philadelphia, Pa.

Remotaire—Unitary air conditioners. American Standard Plumbing & Heating Div., New York, N. Y.

Renewo—Valves, boiler gage cocks. Lunkenheimer Co., Cincinnati, O.

Renu-Glas—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Renu-Vent—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Rep—Boiler Compounds. Kenite Laboratory, Madison, N. J.
Reps—Extractors. Walton Co., Hartford, Conn.
Research—Belting. Graton & Knight Co., Worcester, Mass.
Resibond—Ducts and duct fittings, pipe. Knight Co., Maurice A., Akron, O.
Resiweld—Adhesives, protective coatings for metals. H. B. Fuller Co., St. Paul, Minn.
Return-Aire—Humidifiers. HERRmidifier Co., Lancaster, Pa.
Revent—Valves. Beacon Brass Co., Waltham, Mass.
Revolving—Heaters. Wing Mfg. Co., L. J., New York, N. Y.
Revolving—Ventilators. Burt Mfg. Co., Akron, O.
Rex—Chain drives, coal and ash conveyors, couplings, nozzles, bearings, pumps. Chain Belt Co., Milwaukee, Wis.
Rex—Heaters. Cleveland Heaters Co., Cleveland, O.
Rex—Fans, wheels. Air Controls, Inc., Div. of Cleveland Heater Co., Cleveland, O.
RexAir—Burners, furnaces. Reif-Rexoil, Inc., Buffalo, N. Y.
Rex-Flex—Hose, and tubing. Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
Rexglas—Water heaters. The Cleveland Heater Co., Cleveland, O.
RexHeat—Heaters. Reif-Rexoil, Inc., Buffalo, N. Y.
RexPak—Boilers. Reif-Rexoil, Inc., Buffalo, N. Y.
Rexrust—Protective coatings. Continental Products Co., Euclid, O.
Rex-Tube—Duct fittings, hose, and tubing. Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
Rex-Weld—Hose and tubing. Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.
Rhinamel—Enamels and lacquers. Tropical Paint Co., Cleveland, O.
Rhino—Caulking and sealing compounds. Pecora Inc., Philadelphia, Pa.
Ribbon Heat—Electric heating cable. Cox & Co., Inc., New York, N. Y.
Richducts—Ducts and duct fittings. Richkraft Co., Chicago, Ill.
Richflex—Vapor barriers, insulation. Richkraft Co., Chicago, Ill.
Richfoil—Insulation. Richkraft Co., Chicago, Ill.
Richlite—Vapor barriers. Richkraft Co., Chicago, Ill.
Ridgevent—Roof ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.
Ridgid—Pipe cutting machines, pipe cutting oil, drives, extractors, stocks & dies, stands, wrenches, cutters, chasers, reamers, vises. Ridge Tool Co., Elyria, O.
Ridgoilr—Oiler unit. Ridge Tool Co., Elyria, O.
Ridz—Chemical and water treatment. Sci--effec Labs., Chagrin Falls, O.
Rifco—Unions. Rhode Island Fittings Co., Providence, R. I.
Riflex—Vibration absorbers. United Metal Hose Co., Inc., Long Island City, N. Y.
Rigidon—Pipe, ducts, fans, hoods. Heil Process Equipment Corp., Cleveland, O.
Rigid-Tex-Metals—Sheets. Rigidized Metals Corp., Buffalo, N. Y.
Rigivin—Plastic pipe, fans, hoods. Heil Process Equipment Corp., Cleveland, O.
Rihco—Humidifiers. R. I. Humidifier & Ventilating Co., Inc., Cambridge, Mass.
Rincontrol—Enamels and lacquers, protective coatings. Interchemical Corp., Finishes Div., Newark, N. J.
Rimcor—Controls, indicator-controllers, smoke alarms, regulators, systems. Reliance Instrument Mfg. Corp., Glen Cove, Long Island, N. Y.
Ring-Tite—Couplings. Johns-Manville Corp., New York, N. Y. .
Ripple-Fin—Cooling and heating surface. McQuay, Inc., Minneapolis, Minn.
Risselt—Air eliminators. Morheat Corp., Cincinnati, O.
Rite-Flo—Diffusers, grilles, registers. Lenly Mfg. Co., Inc., Los Angeles, Calif.
Riviera—Air conditioning units. Webster & Co., Warren, Camden, N. J.
Robot—Switches. Miller-Harris Instrument Co., Milwaukee, Wis.
Robot-Eye—Regulators, smoke alarms. Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
Rock cork—Pipe insulation. Johns-Manville, Corp., New York, N. Y.
Rocket—Water heaters. The Cleveland Heater Co., Cleveland, O.
Rocksil—Insulation. North American Asbestos Corp., Chicago, Ill.
Rocop—Heaters. Rome-Turney Radiator Co., Rome, N. Y.
Rod-Pak—Electrodes. Marquette Mfg. Co., Div. of Marquette Corp., Minneapolis, Minn.
Ro-Fin—Tubing. Rome-Turney Radiator Co., Rome, N. Y.
Ro-Flo—Compressors, pumps. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Rokide—Protective coatings for metals. Norton Co., Worcester, Mass.
Rolagrip—Couplings. Gustin-Bacon Mfg. Co., Kansas City, Mo.
Rol-Air—Tools. Imperial-Eastman Corp., Chicago, Ill.
Roll-Bond—Heat exchangers. Olin Mathieson Chemical Corp., Metals Div., New York, N. Y.
Rolled-Rite—Angles, bars, beams, channels and tees; blow pipe fittings. Chicago Metal Mfg. Co., Chicago, Ill.
Roll Matric—Electrodes. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Roll-O-Matic—Filters. American Air Filter Co., Inc., Louisville, Ky.
Rollotron—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Rolo-Bend—Tubing benders. Wilson Mfg. Co., Memphis, Tenn.
Rolo-Flair—Tools. Wilson Mfg. Co., Memphis, Tenn.
Romlair—Roof ventliators. Romla Co., Los Angeles, Calif.
Roof-Top—Unitary air conditioners. Melchior, Armstrong, Dessau, Inc., Ridgefield, N. J.
Roomaire—Air conditioning units. Young Radiator Co., Racine, Wis.
Roommate—Air conditioning units. Nesbitt, Inc., John J., Philadelphia, Pa.
Rotameter—Flow meters. Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Rotary Union—Pipe joints. Perfecting Service Co., Charlotte, N. C.
Rotary Valvent—Ventilators. Swartwout Fabricators, Inc., Kokomo, Ind.
Rotex—Pumps. Warren Pumps, Inc., Warren, Mass.
Roto-Clone—Dust collectors. American Air Filter Co., Inc., Louisville, Ky..
Roto-Cup—Gas and oil burners. Best Combustion Equipment Co., Inc., W. N., Little Ferry, N. J.
Rotocure—Belting. Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Rotodip—Chemical feeders. B-I-F Industries, Omega Div., Providence, R. I.
Rotograte Stoker—Stokers. Detroit Stoker Co., Monroe, Mich.
Roto-Hammers—Electric portable hammers. Skil Corp., Chicago, Ill.
Rotojet—Spray nozzles. Binks Mfg. Co., Chicago, Ill.
Roto-louvre—Dryers. Link-Belt Co., Chicago.
Rotomet—Solder and fluxes. Rotometals, San Francisco, Calif.
Rotometric—Solder and fluxes. Rotometals, San Francisco, Calif.
Roto-Mold—Packing. Linear Inc., Philadelphia, Pa.
Rotonetic—Gas burners. Webster Engineering Div. of Midland-Ross Corp., Tulsa, Okla.
Rotospray—Unitary air conditioners. Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
RotoStoker—Stokers. Detroit Stoker Co., Monroe, Mich.
RotoStoker—Type C-C—Stokers. Detroit Stoker Co., Monroe, Mich.
Roto-Torq—Tools. Richmont, Inc., Monrovia, Calif.
Roto Trol—Controls for starting and stopping pumps, recorders, liquid pressure regulators, alarms, indicators, and switches. Healy Ruff Co., St. Paul, Minn.
Roto-Vent—Ventilators. Hudson Mfg. Co., H. D., Chicago, Ill.
Roto-Wash—Booths. Griffin & Co., Louisville, Ky.
Rotrkore—Masonry drills. Star Expansion Industries, Mountainville, N. Y.
Rotrtwist—Drills. Star Expansion Industries Corp., Mountainville, N. Y.
Ro-Twin—Air compressors. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Round Wound—Transformers. Line Material Industries, McGraw-Edison Co., Milwaukee, Wis.
Roust-A-Bout—Pipe repair clamps. Victaulic Co. of America, Elizabeth, N. J.
Roxaprene—Protective coatings, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.
Royal—Gas fired heaters. Bastian-Morley Co., Inc., LaPorte, Ind.
Royalaire—Grilles, registers. Hart & Cooley Mfg. Co., Holland, Mich.
Royal Clipper—Cutters and shears. M-M-A, Inc., Lancaster, Pa.
Royal, The—Ventilators. Penn Ventilator Co., Philadelphia, Pa.
Rubalt—Enamels and lacquers, protective coatings, high temperature paint. Hague & Co., Inc., Alfred, Div. of Lacquer & Chemical Corp., Brooklyn, N. Y.
Rubbernek—Steel tube fittings. Chicago Forging and Mfg. Co., Chicago, Ill.
Rubbon—Solder. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Rub-R-Lon—Enamels and lacquers. Acorn Refining Co., Cleveland, O.
Rubyfluid—Solder. Ruby Chemical Co., Columbus, O.
Rumaco—Pump-motor units. Ruthman Machinery Co., Cincinnati, O.
Rust Bloc No. 20—Coatings. Turco Products, Inc., Wilmington, Calif.
Rustbuster—Cleaning compounds, water treatment. Cannon Chemical Co., Inc., Cambridge, Mass.
Rust Eradicator—Water treatment. North American Mogul Products Co., The, Cleveland, O.
Rust Evade—Coatings. Turco Products, Inc., Wilmington, Calif.
Rustikote—Protective coatings for metals. Tropical Paint Co., Cleveland, O.
Rust Raider—Compounds. Radiator Specialty Co., Charlotte, N. C.
Rustrem—Protective coatings. Speco, Inc., Cleveland, O.
Rust Remover—Compounds. Turco Products, Inc., Wilmington, Calif.
Rustsolvo—Penetrant solvent. A. W. Chesterton Co., Everett, Mass.
Rust Veto—Protective Coatings. E. F. Houghton & Co., Philadelphia, Pa.

S-A—Conveyors, feeders. Stephens-Adamson Mfg. Co., Aurora, Ill.
SA—Valves. Lunkenheimer Co., Cincinnati, O.
SC—Bearings. Dodge Mfg. Corp., Mishawaka, Ind.
SCM—Bearings. Dodge Mfg. Corp., Mishawaka, Ind.
S.F.E.—Insulation. Standard Fuel Engineering Co., Detroit, Mich.
SF—Integral Fan Base—Vibration bases. Vibration Mountings & Controls, Inc., Corona, N. Y.
SHB Hanger—Absorbers, hangers. Vibration Mountings & Controls, Inc., Corona, N. Y.
S I—Analyzers, indicators, recorders and systems. Standard Instrument Div., Heat-Timer Corp., New York, N. Y.
SL—Bearings. Dodge Mfg. Corp., Mishawaka, Ind.
S & P—Burners, governors, preheaters, strainers, fuel oil units, valves. Staples & Pfeiffer, San Francisco, Calif.
S. R. P. 75—Protective coatings. Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.
S.R.P. 87—Protective coatings, paint. Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.
SSS—Belting. Goodall Rubber Co., Trenton, N. J.
SSS Selfdril Shield Strikr-Studs-Pins—Expansion bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Sabanol—Fuel oil treatment. American Sand-Banum Co., Inc., Merrick, N. Y.
Sabrex—Protective coatings. Navan Products, Inc., El Segundo, Calif.
Saco — Speed reducers. Stephens-Adamson Mfg. Co., Aurora, Ill.
Safe-Fill—Connectors. Gasoilair Equipment Co., New Haven, Conn.
Safe Guard—Fuel oil preheaters. Alstrom Corp., New York, N. Y.
Safe-T-Aire—Air sterilizing units, and lamps. Hanovia Lamp Div., Engelhard Hanovia, Inc., Newark, N. J.
Safetak—Adhesives. Cain Mfg. Inc., Birmingham, Ala.
Safe-T-Submersion—Boilers, burners, heaters, systems. Stout & Sons, David, St. Louis, Mo.
Safety Pull—Hoists. Coffing Hoist Div., Duff-Norton Co., Charlotte, N. C.
Safeway Load-Lift—Trucks. American Pulley Co., The, Div. Van Norman Industries, Inc., Philadelphia, Pa.
Saf-T-Edge—Pipe hangers and supports. Western Wire Products Co., St. Louis, Mo.
Saint Louis—Stokers. Ormsby-Osterman, Inc., St. Louis, Mo.
Sairset—Cement, refractories and refractory cement. Green Fire Brick Co., A. P., Mexico, Mo.
Sal Brick—Solder and fluxes. American Solder & Flux Co., Philadelphia, Pa.
Samco—Incinerators. Syrall Mfg. Co., Syracuse, N. Y.
SANAcoustic—Ceilings. Johns-Manville Corp., New York, N. Y.
Sanitaire—Odor adsorbers for duct systems, sterilizing lamps for duct installation, sterilizing units. Atlantic Ultraviolet Co., Inc., Long Island City, N. Y.
Sanitile—Enamels and lacquers. Master Mechanics Co., Cleveland, O.

Sanitizer—Treatment. Oakite Products, Inc., New York, N. Y.

Sanitron—Sterilizing lamps for duct installation, sterilizing units. Atlantic Ultraviolet Co., Inc., Long Island City, N. Y.

Santobrite—Water treatment. Monsanto Chemical Co., St. Louis, Mo.

Santocel—Insulation. Monsanto Chemical Co., St. Louis, Mo.

Santolene—Fuel oil treatment. Monsanto Chemical Co., St. Louis, Mo.

Santosite—Water treatment. Monstanto Chemical Co., St. Louis, Mo.

Saraloy—Gaskets, packing. Saran Lined Pipe Co., Ferndale, Mich.

Sarancote—Protective coatings. Saran Lined Pipe Co., Ferndale, Mich.

Sarine—Treatment. Berna Corp., Long Island City, N. Y.

Sarine-Amid—Treatment. Berna Corp., Long Island City, N. Y.

Satanite—Refractories & ıefractory cement. Green Fire Brick Co., A. P., Mexico, Mo.

Saunders—Cutters. Armstrong Bros. Tool Co., Chicago, Ill.

Saunders—Pipe cutters. Erie Tool Works, Erie, Pa.

Saunders—Diaphragm valves. Grinnell Co., Inc., Providence, R. I.

Saunders-Barnes—Pipe cutters. American Pipe Tool Co., Chicago, Ill.

Sav-A-Tank—Fuel oil treatment. Sudbury Laboratory, South Sudbury, Mass.

Sawzall—Tools. Milwaukee Electric Tool Corp., Milwaukee, Wis.

Scale-Ban—Compounds. Parke-Hill Chemical Corp., Mt. Vernon, N. Y.

Scale-Solve—Compounds, treatment. Gotham Refining Chemical Co., New York, N. Y.

Scalex—Cleaning compounds, chemical treatment. Lester Laboratories, Inc., Atlanta, Ga.

Scav-Ox—Water treatment. Olin Mathieson Chemical Corp., Chemicals Div., Baltimore, Md.

Scentinel—Compounds. Ampion Corp., Long Island City. N. Y.

Schmidt—Torches. Minn-Kota Foundry & Mfg. Co., Moorhead, Minn.

School Master—Unit ventilators. Rittling Corp., The, Buffalo, N. Y.

Schwan—Gas burners. Jamieson Mfg. Co., Dallas, Texas.

Sci-Aid—Boiler cleaning compounds, treatment. Sci-eff-ec Labs., Chagrin Falls, O.

Scivol—Treatment. Sci-eff-ec Labs., Chagrin Falls, O.

Scoop-Rail—Scoops, vanes. Cain Mfg. Inc., Birmingham, Ala.

Scotch—Adhesive tape. Minnesota Mining & Mfg. Co., St. Paul, Minn.

Scotchrap—Adhesives, underground pipe insulation, adhesive tape, pipe wrap. Minnesota Mining & Mfg. Co., St. Paul, Minn.

Scotch Tite—Plastic tubing. Irvington Div., Minnesota Mining & Mfg. Co., Freehold, N. J.

Scott Foam—Air filters. Foamade Industries, Oak Park, Mich.

Scout—Water heaters. Bastian-Morley Co., Inc., LaPorte, Ind.

Screw King—Reducers and increasers. American Pulley Co., The, Div. Van Norman Industries, Inc., Philadelphia, Pa.

Screw-Seal—Pipe. Robinson Clay Product Co., Inc., The, Akron, O.

Scroll-Aire—Air heaters. Newcomb-Detroit Co., Detroit, Mich.

Scrugun—Tools. Black & Decker Mfg. Co., The, Towson, Md.

Scruin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.

Scru-peller—Sewage ejectors and pumps. Chicago Pump Hydrodynamics Div., Food Ma-Corp., New York N. Y.

Sea Lion—Leather belting. Chicago Belting Div., Chicago-Allis Mfg. Corp., Chicago, Ill.

Sea Rings—Asbestos packing. Johns-Manville Corp., New York, N. Y.

Sealastic—Fittings. Chicago Forging and Mfg. Co., Chicago, Ill.

Sealeak—Compounds. Ampion Corp., Long Island City, N. Y.

Sealed Life—V-Belts. Dodge Mfg. Corp., Mishawaka, Ind.

Sealfas—Adhesives, vapor barriers. Foster Co., Benjamin, Philadelphia, Pa.

Sealmaster—Boiler cleaning and sealing compounds. Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.

Sealmore—Cement and compounds. Armite Laboratories, Los Angeles, Calif.

Sealon—Tank linings. Knight Co., Maurice A., Akron, O.

Seal-Rite—Cement and compounds. Macksons Co., New York, N. Y.

Seal Saver—Packing. Greene, Tweed & Co., North Wales, Pa.

Seal Tight—Frames for holding panel type air filters. George Evans Corp., Moline, Ill.

Seal-Tite—Ducts and duct fittings, pipe and fittings. Williamson Co., The, Cincinnati, O.

Sealtrode—Switches, controls for starting and stopping pumps. Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.

Seasonmaker—Unitary air conditioners. McQuay, Inc., Minneapolis, Minn.

Seasonmaster—Unitary air conditioners. McQuay, Inc., Minneapolis, Minn.

Seazonaire—Unitary air conditioners. Marlo Coil Co., St. Louis, Mo.

See-All—Sight glasses for pipe lines. Sporlan Valve Co., St. Louis, Mo.

Seigelite—Gaskets. Johns-Manville Corp., New York, New York.

Seilon—Plastic sheets. Seiberling Rubber Co., Newcomerstown, O.

Selectaflow—Valves. American-Standard Controls Div., Detroit, Mich.

Selectair—Unitary air conditioners. Johnson Co., S. T., Oakland, Calif.

Select-A-Spede—Speed changers. Allis Co., Louis, The, Milwaukee, Wis.

Selectofoam—Plastics, powders and resins. Pittsburgh Plate Glass Co., Pittsburgh, Pa.

Selectra—Control systems. Maxitrol Co., Southfield, Mich.

Selectric—Heaters. Bastian-Morley Co., Inc., LaPorte, Ind.

Selectrol—Regulators, switches. Automatic Control Co., St. Paul, Minn.

Selectron—Plastics, powders and resins. Pittsburgh Plate Glass Co., Pittsburgh, Pa.

Self-Flare—Fittings. Flodar Corp., Cleveland, O.

Selflube—Sleeve bearings. Keystone Carbon Co., Inc., St. Marys, Pa.

Sel-Lok—Parts for heating and air conditioning equipment. Standard Pressed Steel Co., Jenkintown, Pa.

Sells—Bearings. Royersford Foundry & Machine Co., Royersford, Pa.

Sems—Insulation fasteners. Shakeproof Div., Illinois Tool Works, Elgin, Ill.

Sensatherm—Thermostats. Mercoid Corp., The, Chicago, Ill.

Sensitrol—Relays. Daystrom, Inc., Weston Instruments Div., Newark, N. J.

Sentinel—Valves. McRae Specialty Co., Don, Glendale, Calif.

Sentry—Alarms, smoke indicators, smoke recorders. Edwards, L. V., Rockville Center, N.Y.

Sentry—Valves. Coppus Engineering Corp., Worcester, Mass.

Sep-return—Separators. Wabash Corp., Chicago, Ill.

Serval—Gaskets. Chicago Gasket Co., Chicago, Ill.

Service—Packing. Johns-Manville Corp., New York.

Servicecoat—Enamels and lacquers. Debevoise Co., The, Brooklyn, N. Y.

Servicemaster—Pipe Joints. Aeroquip Corp., Marman Div., Los Angeles, Calif.

Sesure—Gages. Yarnall-Waring Co., Philadelphia, Pa.

Sever-All—Pipe cutters. Allison Campbell Div. of American Chain & Cable Co., Inc., Bridgeport, Conn.

Shafconaire—Unit heaters, fans. OverHead Heaters, Inc., Detroit, Mich.

Shafer—Bearings. Chain Belt Co., Milwaukee, Wis.

Shaft King—Reducers, drives. American Pulley Co., The, Div. Van Norman Industries, Inc., Philadelphia, Pa.

SHALCO—Aluminum sheets. Mueller Brass Co., Port Huron, Mich.

Shallow-Flow—Pumps. Goulds Pumps, Inc., Seneca Falls, N. Y.

Shant-T-Cap—Vent flue caps. Leslie Welding Co., Inc., Franklin Park, Ill.

Shawco—Bends, headers. Shaw Co., Benjamin F., Wilmington, Del.

Shear-Flex—Bases and pads, absorbers, noise elimination for cooling towers. Vibration Mountings & Controls, Inc., Corona, N. Y.

Shear-Seal—Valves. Barksdale Valves, Los Angeles, Calif.

Shield-Arc—Electrodes, arc welders. Lincoln Electric Co., Cleveland, O.

Ship-Heaters—Boilers. Way-Wolff Associates, Inc., Long Island City, N. Y.

SHOKSTOP—Absorbers. Wade Mfg. Co., Elgin, Ill.

Shoktrol—Adsorbers. Zurn Industries, Inc., Erie, Pa.

Shone—Sewage ejectors. Yeomans Bros. Co., Melrose Park, Ill.

Shop King—Welders. Precision Welder Mfg. Co., Chicago, Ill.

Shopmate—Drills. Portable Electric Tools, Inc., Geneva, Ill.

Shuntflo—Meters. B-I-F Industries, Builders-Providence Div., Providence, R. I.

Shure-Drive—Electric portable hammers. Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., New Haven, Conn.

Shure-Set—Tools. Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., New Haven, Conn.

Shur-Flo—Switches. Hays Mfg. Co., Erie, Pa.

Shur-Flo—Fans. Walker Mfg. & Sales Co., St. Joseph, Mo.

Shur-Grip—Tools. Duro-Dyne Corp., New Hyde Park, Long Island, N. Y.

Shuttle Break—Switches. Adam Electric Co., Frank, St. Louis, Mo.

Shut-O-Vent—Louvers and shutters. Reed Unit-Fans, Inc., New Orleans, La.

Sigma—Air diffusers, perforated panels. Wakefield Co., The, Vermilion, O.

Sigma—Welders. Linde Co., Div. of Union Carbide Corp., New York, N. Y.

Signa-Glow—Indicating Thermometers. Industrial Development Laboratories, Inc., Edgewater, N. J.

Silastic—Packing. Dow Corning Corp., Midland, Mich.

Sil-A-Tran—Welders. Mid-States Welder Mfg. Co., Chicago, Ill.

Sil Bond—Solder. United Wire & Supply Corp., Cranston, R. I.

Silence Service—Noise elimination. Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Div., Baltimore, Md.

Silensair—Duct insulation, absorbers, noise elimination for cooling towers. Sound Reduction Corp., East Hartford, Conn.

Silentair—Air diffusers. General Air Products Corp., Cedar Grove, N. J.

Silent-Aire—Fans, propeller. Swift Mfg. Co. Inc., Detroit, Mich.

Silent-Auburn—Burners, heaters, air conditioning units. Auburn Burner Co., Auburn, Ind.

Silent Chain—Drives. Link-Belt Co., Chicago, Ill.

Silent Duct—Connections. Elgen Mfg. Corp., Long Island City, N. Y.

Silent Flow—Pumps. Goulds Pumps, Inc., Seneca Falls, N. Y.

Silent Flow—Sound absorbers, noise elimination for cooling towers. Silence, Inc., Farmingdale, N. Y.

Silent Knight—Valves. White-Rodgers Co., St. Louis, Mo.

Silentride—V belts. Zatko Metal Products Co., Euclid, O.

Siltentube—Duct insulation, absorbers, noise elimination for cooling towers. Sound Reduction Corp., East Hartford, Conn.

Sil Flux—Solder. United Wire & Supply Corp., Cranston, R. I.

Sil-Fos—Solder. Handy & Harman, New York, N. Y.

Silica Gel—Refrigerant dehydrators. Eagle Chemical Co., Inc., Mobile, Ala.

Silicon-Alkyd—Protective coatings. Watson-Standard Co., Pittsburgh, Pa.

Silicone—Protective coatings. Dow Corning Corp., Midland, Mich.

Silimite—Water treatment. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Sillimanite—Refractories and refractory cement. Taylor Sons Co., Charles, Cincinnati.

Sill-Line—Radiation. Nesbitt, Inc., John J., Philadelphia, Pa.

Siloo—Solvents, fuel oil treatment. Petroleum Solvents Corp., New York, N. Y.

Sil-rayvector—Baseboard radiation. Radiant-Ray Radiation, Inc., Newington, Conn.

Siltube—Solder. All-State Welding Alloys Co., Inc., White Plains, N. Y.

Silvaloy—Solder. American Platinum & Silver Div., Engelhard Industries, Inc., Newark, N. J.

Silver-brite Roller Chain—Drives. Link-Belt Co., Chicago, Ill.

Silver Comet—Coatings. Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga.

Silver Star—Torches, welding and cutting apparatus. Smith Welding Equipment Corp., Minneapolis, Minn.

Silver Steel—Tools. Atkins Saw Div., Borg-Warner Corp., Greenville, Miss.

Silver Streak—Tools. Atkins Saw Div., Borg-Warner Corp., Greenville, Miss.

Silverstreak—Drives. Link-Belt Co., Chicago, Ill.

Silver Streak—Blower wheels. Viking Air Products Div., the Lau Blower Co., Cleveland, O.

Silver Stream—Spray nozzles. Skinner Irrigation Co., Troy, O.

Silvertop—Eliminators, traps. Anderson Co., V. D., The, Div. of International Basic Economy Corp., Cleveland, O.

Silver-Weld—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.

SilWeld—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.

Simplex—Gages. Viking Pump Co., Cedar Falls, Ia.

Simplex—Regulators. Bell & Gossett Co., Morton Grove, Ill.

Simplex—Vises. Desmond-Stephan Mfg. Co., Urbana, O.

Simplex—Wrenches. Lowell Wrench Co., Worcester, Mass.

Sim-ply-trol—Indicator-controllers, regulators. Assembly Products, Inc., Chesterland, O.

Simsestos—Packing. Sims Pump Valve Co., Hoboken, N. J.

Simsite—Packing. Sims Pump Valve Co., Hoboken, N. J.

Sim-Trol—Controls, combustion regulators. Simplex Mfg. Co., Fond du Lac, Wis.

Sine Switch—Switches. Texas Instrument Inc., Metals & Controls Div., Attleboro, Mass.

Single-Flow—Cooling towers. Marley Co., The, Kansas City, Mo.

Sioux—Electric drills, grinders and grinding wheels, wrenches, saws, shafts. Albertson & Co., Inc., Sioux City, Ia.

Siphon—Ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.

Sirocco—Blowers, fans. American-Standard Industrial Div., Detroit, Mich.

Skimmer—Dust collectors. American Air Filter Co., Inc., Louisville, Ky.

Skip-Tooth—Dies. Nye Tool Co., Chicago, Ill.

Sky-Blast—Roof fan ventilators. Propellair Div., Robbins & Myers Inc., Springfield, O.

Skyline—Ventilators. Arex Co., Chicago, Ill.

Skymaster—Ventilators. Acme Engineering & Mfg. Corp., Muskogee, Okla.

Sky Witch—Portable scaffolds. Charles Machine Co., Perry, Okla.

Slack Tube—Analyzers, anemometers, gages, combustion testing kits, manometers, meters, switches, smoke testers, pitot tubes. Dwyer Mfg. Co., F. W., Michigan City, Ind.

Sleeveline—Valves. Duriron Co., Inc., The, Dayton, O.

Sleevoil—Bearings. Dodge Mfg. Corp., Mishawaka, Ind.

Slenderizer—Direct radiation. Burnham Corp., Irvington, N. Y.

Slip-On—Pipe insulation. Taft-Jenkins Co., Inc., Holyoke, Mass.

Slo-Speed—Drives, motor gears. Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.

Sludge-Ban—Compounds. Parke-Hill Chemical Corp., Mt. Vernon, N. Y.

Sludgemaster—Fuel oil treatment. Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.

Sludge Solvent No. 32—Fuel oil treatment. Montgomery Chemical Co., Jenkintown, Pa.

Sludgit—Fuel oil treatment. Anderson Chemical Co., Inc., Macon, Ga.

Sludgout—Fuel oil treatment. Metropolitan Refining Co., Inc., Long Island City, N. Y.

Slugin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.

Smith-Clamp—Pipe repair clamps. Pipe Line Development Co., Cleveland, O.

Smith-Dolan—Electric preheaters and stress relievers. Electric Arc, Inc., Newark, N. J.

Smith Split-Coupling—Pipe couplings. Pipe Line Development Co., Cleveland, O.

Smith Split-Sleeve—Pipe repair clamps. Pipe Line Development Co., Cleveland, O.

Smog-Free—Odor absorbers. Radex Corp., Chicago, Ill.

Smokehatch—Roof ventilators. Penn Ventilator Co., Philadelphia, Pa.

Smokeport—Roof ventilators. Penn Ventilator Co., Philadelphia, Pa.

Smoke-Trip—Ventilators. Propellair Div., Robbins & Myers, Inc., Springfield, O.

Smokey—Guns for testing air movement. Design Engineers, Rockford, Ill.

Smoothcote—Arc welding electrodes. All-State Welding Alloys Co., Inc., White Plains, N. Y.

Snapin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.

Snaplock—Clamps. Ideal Corp., Brooklyn, N. Y.

Snap-lock—Electrical switches. National Acme Co., The, Cleveland, O.

Snaplok—Gas vent and flue pipe and fittings. Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.

Snap-O-Trol—Switches. Instruments, Inc., Tulsa, Okla.

Snip-It—Air filters. C.L.B. Co., Houston, Tex.

Snug—Radiation. Well-McLain Co., Michigan City, Ind.

Sockolets—Fittings. Bonney Forge & Tool Wks., Allentown, Pa.

Sod-R-Braze—Torches. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.

Sof Tite—Sheets. Wheeling Corrugating Co., Wheeling, W. Va.

SofTite—Sheets. Wheeling Steel Corp., Wheeling, W. Va.

Sofetstream—Water softeners. Reynolds Water Conditioning Co., Detroit, Mich.

Softweld—Electrodes. Lincoln Electric Co., Cleveland, O.

Sola-Flex—Pipe joints. Solar Aircraft Co., San Diego, Calif.

Solar Flame—Burners. National-U.S. Radiator Div., Crane Co., Johnstown, Pa.

Solar Screens—Sun reflecting screens. Federal Seaboard Terra Cotta Corp., New York, N. Y.

Solidaire—Air freshening compounds. Airkem, Inc., New York, N. Y.

Solray—Radiation. Weil-McLain Co., Michigan City, Ind.

Sol-vet—Cleaning compounds, water treatment. Anderson-Stolz Corp., Kansas City, Mo.

Solvex—Cleaning compounds. Chemical Solvent Co., Birmingham, Ala.

Solvo-Rust—Solvent. Permatex Co., Inc., Long Island, N. Y.

Sonblaster—Pipe cleaning machines. Narda Ultrasonics Corp., Westbury, Long Island.

Sonderglass—Glasses. Chesterton Co., A. W. Everett, Mass.

Sonic-Ray—Heaters. Bica Co., Girard, O.

Sonoairduct—Ducts. Sonoco Products Co., Construction Products Div., Hartsville, S. C.

Son-No-Mar—Enamels and lacquers. Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.

Sonobond—Solder. Aeroprojects, Inc., West Chester, Pa.

Sonoray—Leak detectors, equipment. Branson Instruments, Inc., Stamford, Conn.

Sonotard—Concrete densifiers. Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.

Sonotrol Curb—Ventilators. Penn Ventilator Co., Philadelphia, Pa.

Sono-Turn—Sound absorbers, duct turning vanes. Sound-Control Products Co., San Francisco, Calif.

Sootrocide—Soot destroyers. Metropolitan Refining Co., Inc., Long Island City, N. Y.

Sootspray—Soot destroyers. Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.

Sorbead—Refrigerant dehydrators. Mobil Oil Co., Inc., New York, N. Y.

So-Soft—Softeners. Stover Water Softener Co., St. Charles, Ill.

So-Soft Amatic—Water softeners. Stover Water Softener Co., St. Charles, Ill.

Soundliner—Insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.

Sound Metal—Noise elimination. Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Div., Baltimore, Md.

Soundscope—Testers. Marsh Instruments Co., Div. of Colorado Oil & Gas Corp., Skokie, Ill.

Soundscope—Indicators. Mine Safety Appliances Co., Pittsburgh, Pa.

Sound Stream—Absorbers. Industrial Sound Control Dept. of Koppers Co., Inc., Metal Products Div., Baltimore, Md.

Sound-Zorbers—Vibration absorbers. Finn & Co., Inc., T. R., Hawthorne, N. J.

Sovereign—Packing. Darcoid Co., Inc., New York, N. Y.

Spacemaster—Heating and ventilating units. The Rittling Corp., Buffalo, N. Y.

Space Saver—Heaters. Payne Company, La Puente, Calif.

Spang—Underground piping conduit, pipe couplings, steel pipe, steel tubing. Tubular Div., The National Supply Co., Pittsburgh.

Sparktrodes—Electrodes. Dielectric Products Co., Inc., Jersey City, N. J.

Spartan—Packing, belting. Graton & Knight Co., Worcester, Mass.

Spasaver—Cooler units. Drayer-Hanson Div., Crane Co., Los Angeles, Calif.

Spasolvo—Penetrant solvent. A. W. Chesterton Co., Everett, Mass.

Spearhead—Gasket cutters. Zimmerman Packing, Cincinnati, O.

Special X—Solder. Chemical Specialty Div., Shooz Polish Mfg. Co., Milwaukee, Wis.

Spectronic-20—Colorimeters. Bausch & Lomb Optical Co., Rochester, N. Y.

Spe-D-Flar—Tools. Engesser & Co., William L., El Monte, Calif.

Speedaire—Reducers. Cleveland Worm & Gear Div., Eaton Mfg. Co., Cleveland, O.

Speedaire—Compressors. Dayton Electric Mfg. Co., Chicago, Ill.

Speed Drills—Drills. Speedway Mfg. Co., Div. of Thor Power Tool Co., La Grange Park, Ill.

Speed Grinders—Grinders. Speedway Mfg. Co., Div. of Thor Power Tool Co., La Grange Park, Ill.

Speedomax—Indicator and recorder-controllers, solar sensing instruments, recorders, thermometers. Leeds & Northrup Co., Philadelphia, Pa.

Speed Primer—Pumps. Chain Belt Co., Milwaukee, Wis.

Speed Rail—Pipe fittings. Hollaender Mfg. Co., Cincinnati, O.

Speed-Rex—Protective coatings. Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Detroit, Mich.

Speed Saw—Electric saws. Speedway Mfg. Co., Div. of Thor Power Tool Co., La Grange Park, Ill.

Speed-Thru—Pipe pushers, stocks and dies. Mercury Hydraulics, Inc., Denver, Colo.

Speed-Trol—Changers, drives. Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., Los Angeles, Calif.

Speed Variator—Changers. Cleveland Worm and Gear Co., Cleveland, O.

Speedy—Clamps, cutters, packing, plugs, tools, wrenches. Chicago Specialty Mfg. Co., Chicago, Ill.

Speedy-Cal—Nameplates. Anodyne, Inc., Div. North Shore Nameplate, N. Miami Beach, Fla.

Speedylectric—Boilers, generators, superheaters. Pantex Mfg. Corp., Pawtucket, R. I.

Speedy-Marx—Identification markers. Anodyne, Inc., Div. North Shore Nameplate, N. Miami Beach, Fla.

Speedytherm—Boilers. Pantex Mfg. Corp., Pawtucket, R. I.

Spekaluminite—Coatings. Special Chemicals Corp., Ossining, N. Y.

Spekleen—Compounds. Special Chemicals Corp., Ossining, N. Y.

Spher-Align—Bearings. Dodge Mfg. Corp., Mishawaka, Ind.

Sphero—Ball type and Blow-off valves. Fairbanks Co., New York, N. Y.

Spicymist—Air refreshening compounds. Acme Chemical Co., Milwaukee, Wis.

Spinner—Gravity ventilators. Warner Ventilator Co., LaGrange, Ind.

Spinner—Ventilators. Inland Steel Products Co., Milwaukee, Wis.

Spin-seat—Steam trap floats. Reichert Float & Mfg. Co., Toledo, O.

Spintex—Building and duct insulation. Johns-Manville Corp., New York, N. Y.

Spiral Lockseam—Spiral welded ducts. United Sheet Metal Co., Inc., Columbus, O.

Spiralweld—Nickel plated pipe. Taylor Forge & Pipe Wks., Chicago, Ill.

Spiraweld—Pipes. Naylor Pipe Co., Chicago.

Spiro—Heaters. Stout & Sons, David, St. Louis, Mo.

Spirodome—Spray nozzles. Fluor Products Co., Santa Rosa, Calif.

Spirotallic—Gaskets. Johns-Manville Corp., New York, N. Y.

Spirovane—Fans. Western Blower Co., Seattle, Wash.

Sponge-Dortite—Tape for sealing joints. Durkee-Atwood Co., Minneapolis, Minn.

Spongex—Bases and pads, gaskets, pipe insulation. B. F. Goodrich Co., Shelton, Conn.

Spotaire—Air conditioning units, heaters. Drayer-Hanson Div., Crane Co., Los Angeles, Calif.

Spra-Chiller—Water chillers. Watkins Co., J. E., Maywood, Ill.

Spraco—Booths, nozzles aftercoolers, humidifiers, regulators, systems, separators, strainers, washers. Spray Engineering Co., Burlington, Mass.

Spra-Rite—Nozzles. Binks Mfg. Co., Chicago.

SpraTower—Cooling Towers. Marley Co., The, Kansas City. Mo.

Spray-Acoustic—Insulation. Sprayo Flake Co., Chicago, Ill.

Spray-It—Air compressors, viscosimeters. Thomas Industries, Inc., Electric Sprayit Div., Sheboygan, Wis.

Spray-Mastic—Protective coatings. Eagle-Picher Co., Cincinnati, O.

Spray Stops—Protective covers. Neirad Industries, Inc., Saugatuck, Conn.

Spraywheel—Air washers. Mountain States Equipment Co., Denver, Colo.

Spring-Flex—Absorbers, bases and pads, hangers, flexible hose, noise elimination for cooling tower. Vibration Mountings & Controls, Inc., Corona, N. Y.

Springin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.

Spun steel—Pulleys, sheaves. Mercury Clutch Div., Automatic Steel Products, Inc., Canton, O.

Square-Fin—Radiation. Slant-Fin Radiator Corp., Richmond Hill, N. Y.

Stabilflo—Valves. Foxboro Co., Foxboro, Mass.

Stafoam—Building insulation. Dayco Corp., Dayton, O.

Stainlend—Electrodes. Arcos Corp., Philadelphia, Pa.

StainRod—Rods. Eutectic Welding Alloys Corp., Flushing, N. Y.

StainTin—Solder. Eutectic Welding Alloys Corp., Flushing, N. Y.

StainTrode—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.

Stainweld—Electrodes. Lincoln Electric Co., Cleveland, O.

Stalastic—Boiler and radiator sealing compounds, insulation. Eagle-Picher Co., Cincinnati, O.

Standard—Vacuum cleaners, dust collectors. Empire Chemical Products Co., Newark, N. J.

Standard—Ventilators. Burt Mfg. Co., Akron.

Standard Thrift—Pipe hangers and supports. Western Wire Products Co., St. Louis, Mo.

Star-Kimble—Electric motors. Safety Electrical Equipment Corp., New Haven, Conn.

Statick—Ventilators. Hirschman-Pohle Co., Inc., Le Roy, N. Y.

Stat-O-Seal—Seals. Parker Seal Co., Div. of Parker-Hannifin Corp., Cleveland, O.

Staxauster—Roof ventilators, fans. Allen Cooler & Ventilator, Inc., Rochester, Mich.
Staynew—Filters, silencers. Dollinger Corp., Rochester, N. Y.
Stazin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Stazon—Caulking & Cleaning compounds. Plastic Products Co., Detroit, Mich.
Steam-Pak—Boilers. York-Shipley, Inc., York, Pa.
Steam-Pakette—Boilers. York-Shipley, Inc., York, Pa.
Steelarc—Electrodes, arc welding. All-State Welding Alloys Co., Inc., White Plains, N. Y.
Steelbestos—Metal sheets. Bowman Steel Corp., Pittsburgh, Pa.
Steelfin—Surface. New York Blower Co., Chicago, Ill.
Steelflex—Couplings. Falk Corp., Milwaukee.
SteelTectic—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
Steelweld—Brakes, power shears. Cleveland Crane & Eng. Co., Wickliffe, O.
Stemco—Thermostats. Stevens Mfg. Co., Inc., Mansfield, O.
Sterilamp—Lamps. Westinghouse Electric Corp., Lamp Div., Bloomfield, N. J.
Steritron—Water treatment, water sterilizing units. Hanovia Lamp Div., Engelhard Hanovia, Inc., Newark, N. J.
Sterlco—Pumps, strainers, regulators, traps, valves. Sterling, Inc., Milwaukee.
Sterling-Magic—Non-metal hose. New York Belting & Packing Co., Passaic, N. J.
Stewart—Propeller fan blades, propeller fans, electrical switches. Wind-Way Fan & Ventilator Co., New Orleans, La.
Stic-N-Seal—Pipe joint cement and compounds. Permatex Co., Inc., Long Island, N. Y.
Stic-Tite—Cement, insulation. Refractory & Insulation Corp., New York, N. Y.
Stirling—Boilers. Babcock & Wilcox Co., Boiler Div., Barberton, O.
Stokerlay—Relays. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Stonewall—Board and sheets. Ruberoid Co., New York, N. Y.
Stopple—Repair plugs for pipe. T. D. Williamson, Inc., Tulsa, Okla.
Storm Shade—Windows. Ingersoll Products Div., Borg-Warner Corp., Chicago, Ill.
Straitflo—Strainers. Hays Mfg. Co., Erie, Pa.
Strato-Flair—Tools. Wilson Mfg. Co., Memphis, Tenn.
Stratronic—Ionization apparatus, dust control systems. CRS Industries, Inc., Philadelphia, Pa.
Streamjet—Spray nozzles. Spraying Systems Co., Bellwood, Ill.
Streamline—Couplings, coils, filters, dehydrators, tubing benders, glasses, hose, plugs, purgers, pipe, solder, parts for heating and air conditioning equipment, cutters, fittings, hangers, heat exchangers, manifolds, nipples, pipe line strainers, tubing, unions, valves. Mueller Brass Co., Port Huron, Mich.
Stream-Line—Sound absorbers. American Engineering Co., Kansas City, Mo.
Streamlined—Chambers. Green Fire Brick Co., A. P., Mexico, Mo.
Streamliner—Registers. Auer Register Co., Cleveland, O.
Streamliner—Belting. New York Belting & Packing Co., Passaic, N. J.
Strickler—Pipe cutting and threading machines. Wachs Co., E. H., The, Chicago, Ill.
Strip-Grip—Protective coatings for metals. Adhesive Products Corp., New York, N. Y.
Strongback—Repair kits. Cordo Chemical Corp., Norwalk, Conn.
Strongbarn—Steel sheets. Granite City Steel Co., Granite City, Ill.
Stronghold—Belting. Rhoads & Sons, J. E., Wilmington, Del.
Stubby—Vacuum cleaners, dust collectors. Empire Chemical Products Co., Newark, N. J.
Stud-Driver—Fasteners, tools. Remington Arms Co., Inc., Bridgeport, Conn.
Stud-Pins—Bolts, toggle and anchor. Fastway Fasteners, Inc., Lorain, O.
Styrene-Copolymer—Plastic pipe. Vanton Pump & Equipment Corp., Hillside, N. J.
Styrofoam—Insulation. Dow Chemical Co., The, Midland, Mich.
Styropol—Adhesives. Adhesive Products Corp., New York, N. Y.
Subette—Electric motors. Byron Jackson Pumps, Inc., A Subsid. of Borg-Warner Corp., Los Anegeles, Calif.
Submatic—Electric motors. Franklin Electric Co., Inc., Bluffton, Ind.
Submersipool—Electric motors. Franklin Electric Co., Inc., Bluffton, Ind.
Sudden Depth—Drill. Paine Co., Addison, Ill.
Sulfran—Oil. Mobil Oil Co., Inc., New York, N. Y.
Sullivan—Controls. Cole-Sewell Engineering Co., St. Paul, Minn.
Sundial—Radiators. Slant-Fin Radiator Corp., Richmond Hill, N. Y.
Sunicut—Oil. Sun Oil Co., Philadelphia, Pa.
Suniso—Refrigeration oil. Sun Oil Co., Philadelphia, Pa.
Sun-Lite-Aire—Sterlizing lamps and units. Sampson Scientific Co., Div. of the Sampson Chemical & Pigment Corp., Chicago, Ill.
Sunnyaire—Heaters. Crane Co., Chicago, Ill.
Sunnybase—Radiation. Crane Co., Chicago Ill.
Sunnyday—Boilers. Crane Co., Chicago, Ill.
Sunnywall—Radiation. Crane Co., Chicago, Ill.
Sunrad—Direct radiation. American-Standard Plumbing & Heating Div., New York, N. Y.
Sunray—Radiation. National-U.S. Radiator Div., Crane Co., Johnstown, Pa.
Super—Transformers. Union Electric & Mfg. Co., Jersey City, N. J.
Super—Vacuum cleaners, dust collectors. Empire Chemical Products Co., Newark, N. J.
Super Air-Van—Wall ventilators. Gallaher Co., The, Omaha, Nebr.
Supercutno—Packing. Greene, Tweed & Co., North Wales, Pa.
Super-Diamond—Floor and ceiling plates. Eastern Stainless Steel Corp., Baltimore, Md.
Super Dry-Eye—Refrigerant dehydrators, sight glasses for pipe lines. Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Super Dylan—Plastics, powders and resins. Koppers Co., Inc., Pittsburgh, Pa.
Superector—Wrenches. Williams & Co., J. H., Buffalo, N. Y.
Superex—Pipe, boiler and tank insulation. Johns-Manville Corp., New York, N. Y.
Super Filter Coat—Adsorbers. Research Products Corp., Madison, Wis.
Super Fine—Insulation. Johns-Manville Corp., New York, N. Y.
Super Fine—Insulation. Mundet Cork Co., North Bergen, N. J.
Superfin—Furnaces, heaters. American Foundry & Furnace Co., Bloomington, Ill.
Super Finish—Insulation. Refractory & Insulation Corp., New York, N. Y.
Super Finish Stic-Tite—Finishing cement insulation. Refractory & Insulation Corp., New York, N. Y.
Super-Flo—Dehydrators, filters. Remco, Inc., Zelienople, Pa.
Superflux—Solder. Paul-Lewis Laboratories, Inc., Milwaukee, Wis.
Superglas—Insulation. Mundet Cork Corp., North Bergen, N. J.
Superheat—Burners. Selas Corp. of America, Dresher, Pa.
Superholder—Tools. Nupla Mfg. Co., Los Angeles, Calif.
Superior—Fans. American Foundry & Furnace Co., Bloomington, Ill.
Superior—Gas fired heaters. Bastian-Morley Co., Inc., LaPorte, Ind.
Superior—Meters. Neptune Meter Co., New York, N. Y.
Super Light—Insulation. Philip Carey Mfg. Co., Cincinnati, O.
Supermatic—Saws. Clipper Mfg. Co., Kansas City, Mo.
Super Powerhouse—Insulating cement, insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.
Superratchet—Ratchet Wrenches. Williams & Co., J. H., Buffalo, N. Y.
Super-Saw—Tools, electric saws. RCS Tool Corp., Bloomington, Ill.
Super-Service—Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
Super Silvertop—Traps. The V. D. Anderson Co., Div. of International Basic Economy Corp., Cleveland, O.
Super "66"—Insulation, cement insulating Eagle-Picher Co., Cincinnati, O.
Super-Seal—Electric motors. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Super Seal—Valves. Farris Flexible Valve Corp., Palisades Park, N. J.
Supersheat—Gaskets, packing. Greene, Tweed & Co., North Wales, Pa.
Supersol—Cleaning compounds, fuel oil treatment. Sterling E. Norcross Co., Bloomfield, N. J.
Superspun—Cast iron pipe. Combustion Engineering Inc., New York, N. Y.
Supertex—Insulation. Mundet Cork Corp., North Bergen, N. J.
Supertherm—Heating systems. Ross Engineering Div., J. O., Midland-Ross Corp., New York, N. Y.
Super Venturi—Fittings. Taco Heaters, Inc., Cranston, R. I.
Super X—Coatings. Nelson Mfg. Co., B. F., Minneapolis, Minn.
Surector—Water chlorinators. Clayton Mark & Co., Evanston, Ill.
Surefit—Ducts and duct fittings. Henry Furnace Co., Medina, O.
Surefit—Ducts and duct fittings, duct dampers Olsen Mfg. Co., C. A. Elyria, O.
Sure-Joint—Caulking and sealing compounds. Insul-Coustic, Inc., Maspeth, L.I. N. Y.
Sure Klean—Compressors, treatment. Process Solvent Co., Kansas City, Kans.
Sure Lag—Adhesives. Insul-Coustics, Inc., Maspeth, L.I., N. Y.
Sure Return—Condensation return pumps. Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., Chicago, Ill.
Sure Stik—Adhesives, vapor barriers. Insul-Coustic, Inc., Maspeth, L.I., N. Y.
Sureweld—Electrodes, welders. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Surfamax—Pipe line filters. Micro Metallic Div., Pall Corp., Glen Cove, N. Y.
Surgemaster—Boiler cleaning compounds. Stewart-Hall Chemical Corp., Mt. Vernon, N. Y.
Surgex—Compounds. Tankit Co., The, Newark, N. J.
Sweatflow—Valves. Quality Specialty Co., Inc., Camden, N. J.
Sweepolets—Pipe fittings. Bonney Forge & Tool Wks., Allentown, Pa.
Swif—Penetrant solvent. Hercules Chemical Co., Inc., New York, N. Y.
Swish—Cleaning compounds. Montgomery Chemical Co., Jenkintown, Pa.
Sylphon—Steam traps. Webster & Co., Warren, Camden, N. J.
Synchro-Flame—Burners. Synchronous Flame, Inc., Walworth, Wis.
Synchrogear—Changers. Zurn Industries, Inc., Erie, Pa.
Synchro-Lectric—Viscosimeters. Brookfield Engineering Laboratories, Inc., Stoughton, Mass.
Synchron—Motors. Hansen Mfg. Co., Inc., Princeton, Ind.
Synchro-Scan—Indicators. B-I-F Industries, Builders-Providence Div., Providence, R. I.
Synchro Valves—Operators, valves. The Bristol Co., Waterbury, Conn.
Syncretizer—Unit ventilators. Nesbitt, Inc., John J., Philadelphia, Pa.
Syncro—Gages, regulators, combustion control systems. Canton Stoker Corp., Canton, O.
Syncrogear—Drives, gear-motors, speed reducers. U. S. Electrical Motors, Inc., Los Angeles. Calif.
Syncro-Spede—Motors. Allis Co., Louis, Milwaukee, Wis.
Syndolag—Refractories and refractory cement. Basic Inc., Cleveland, O.
Synite—Protective coatings for metals. Arco Co., The, Cleveland, O.
Syphonaire—Ventilators. Western Engineering & Mfg. Co., Los Angeles, Calif.

T—Torches. Lincoln Electric Co., The, Cleveland, O.
TBTO—Water treatment. Metal & Thermit Corp., Rahway, N. J.
TMC—Dehydrators, refrigerant receivers, refrigerating condensers, mufflers. Tube Manifold Corp., North Tonawanda, N. Y.
T.N.—Burners. Roberts-Gordon Appliance Corp., Buffalo, N. Y.
T. T.—Smoke guns. Hill & Co., E. Vernon, Lake Geneva, Wis.
"TW"—Unit coolers. McQuay, Inc., Minneapolis, Minn.
TXT Valves—Valves. Texsteam Corp., Houston, Tex.
Tablok—Insulation. Eagle-Picher Co., Cincinnati. O.
Tag—Hygrometers, thermometers, thermometer wells. Tagliabue Div., Marshalltown Mfg., Inc., Marshalltown, Ia.
Tal-Bender—Benders. Hein-Werner Corp., Waukesha, Wis.
Tamax—Refractories and refractory cement. Taylor Sons Co., Charles, Cincinnati, O.
Tampin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.
Tamul—Refractories and refractory cement. Taylor Sons Co., Charles, Cincinnati, O.
Tanastic—Belting. Rhoads & Sons, J. E., Wilmington, Del.
Tanco—Insulation, duct, sound deadening. Thompson and Co., Oakmount, Pa.
Tankcaire—Dehumidifiers. Cargocaire Engineering Corp., New York, N. Y.
Tank-O-Meter—Gages, indicators. Uehling Instrument Co., Paterson, N. J.
Tanktrol—Regulators, switches, sprinkler system controls. Automatic Control Co., St. Paul, Minn.
Tannate—Packing. Rhoads & Sons, J. E., Wilmington, Del.
Tannate-Rockwood—Belt drives. Rhoads & Sons, J. E., Wilmington, Del.
Tantalum—Protective coatings for metals. Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.
Tantalum—Capacitors. P. R. Mallory & Co., Inc., Indianapolis, Ind.
Tapebinder—Industrial tape. Gerrard & Co., A. J., Des Plaines, Ill.
Taper-Lock—Couplings, V-belt drives, pulleys and sheaves. Dodge Mfg. Corp., Mishawaka, Ind.

Tarblok—Refractories and refractory cement. Basic Inc., Cleveland, O.
Tarmix—Refractories and refractory cement. Basic Inc., Cleveland, O.
Tasgon—Solvent. Cabot, Inc., Samuel, Boston, Mass.
Tasil—Furnace cement, refractories and refractory cement. Taylor Sons Co., Charles, Cincinnati, O.
Tayco-40—Furnace and refractory cement, refractories. Taylor Sons Co., Charles, Cincinnati.
Taycor—Refractories and refractory cement, furnace cement. Taylor Sons Co., The Charles, Cincinnati, O.
Tec-Tape—Leak detectors. Pyrodyne, Inc., Los Angeles, Calif.
Teel—Pumps, circulators. Dayton Electric Mfg. Co., Chicago, Ill.
Teflon—Gaskets, plastic tubing. Chicago Gasket Co., Chicago, Ill.
Teflon—Pipe joints, packing. United States Gasket Co., Plastics Div. of Garlock, Inc., Camden, N. J.
Teflon—Plastics, powder and resins. duPont deNemours & Co., Inc., E. I., Polychemicals Dept. Wilmington, Del.
Teflon-ize—Protective coatings. Chicago Gasket Co., Chicago, Ill.
Teksag—Boiler cleaning compounds. Agnew & Tomlinson, Long Island City, N. Y.
Tel-A-Pipe—Identification markers for piping. Westline Products Div. of Western Lithograph Co., Los Angeles, Calif.
Telecator—Gages, recorders and recorder-controllers. Automatic Control Co., St. Paul.
Telecode—Relays. Benjamin Electric Mfg. Co., Des Plaines, Ill.
Telematic—Gages. Instruments, Inc., Tulsa, Okla.
Telescan—Recorders, transmitters, recorder-controllers. Automatic Control Co., St. Paul, Minn.
Teletrol—Indicator-controllers, recorder-controllers, recorders, transmitters. Automatic Control Co., St. Paul, Minn.
Teletrol—Controllers and starters. Airgard Mfg. Co., Chicago, Ill.
Tellevel—Switches. Stephens-Adamson Mfg. Co., Aurora, Ill.
Telltale—Valves, solenoids and solenoid coils. Watkins Co., J. E., Maywood, Ill.
Teltru—Anemometers, gages, indicators. Hill & Co., E. Vernon, Lake Geneva, Wis.
Temflex—Plastic tubing. Irvington Div., Minnesota Mining & Mfg. Co., Freehold, N. J.
Temp-A-Rator—Valves. Beacon Brass Co., Waltham, Mass.
Temp-Con-Trol—Valves. Raymanco Mfg. Co., Owatonna, Mich.
Temp-Guard—Motor controllers and starters, thermostats. Franklin Dales Co., Akron, O.
Tem-Plate—Temperature measuring instruments. Pyrodyne Inc., Los Angeles, Calif.
Temp-lo—Insulation. Lockport Mills, Inc., Lockport, N. Y.
Tempmaster—Thermostats. Crown Controls Co., Inc., New Bremen, O.
Tempoint—Thermometers. Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Tempotherm—Thermostats. General Controls Co., Glendale, Calif.
Temp-R-izer—Burners. Laharco Industries, Minneapolis, Minn.
Temproof—Bases and pads. Lord Mfg. Co., Erie, Pa.
Tempscribe—Recorders. Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Tenite—Plastics. Plastics Div., Eastman Chemical Products, Inc., Kingsport, Tenn.
Tenite Acetate—Plastics, powders and resins. Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co., Kingsport, Tenn.
Tenite Butyrate—Plastics, powders and resins. Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co., Kingsport, Tenn.
Tenite Polyethylene—Plastics, powders and resins. Eastman Chemical Products, Inc. Subsidiary, Eastman Kodak Co., Kingsport, Tenn.
Tenite Polypropylene—Plastics, powders and resins. Eastman Chemical Products, Inc., Subsid., Eastman Kodak Co., Kingsport, Tenn.
Tenite Propionate—Plastics, powders and resins. Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co., Kingsport, Tenn.
Tens-A-Matic—Motor bases. Industrial Marketers, Ferndale, Mich.
Tensilend—Arc welding electrodes. Arcos Corp., Philadelphia, Pa.
Tensulate—Insulation. Tennessee Products and Chemical Corp., Nashville, Tenn.
Tergitol—Water treatment. Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.
Testite—Fittings. General Fittings Co., East Greenwich, R. I.
Texalon—Plastic belting. Rhoads & Sons, J. E., Wilmington, Del.
Texan—Heaters. Hotstream Heater Co., Cleveland, O.
Textolite—Plastic sheets, plastic tubing. General Electric Co., Laminated Products Dept., Coshocton, O.
T-Flo—Dehydrators. Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Thawzone—Dehydrant and acid neutralizer. Highside Chemicals, Inc., Clifton, N. J.
Them-O-Fin—Fin tube radiation. Heat Transfer Products, Inc., Perkasie, Pa.
Therma-Cal—Nameplates. Anodyne, Inc., Div. North Shore Nameplate, N. Miami Beach, Fla.
Thermaflex—Connectors, tubing, ducts and duct fittings, hose. Flexible Tubing Corp., Guilford, Conn
Therma-Koil—Tubing. Radiant Heat and Cooling Co., Santa Clara, Calif.
Thermalbridge—Thermometers. Thompson Research & Mfg. Co., Davenport, Fla.
Thermal Electric—Systems. Fluid Systems, Inc., New Haven, Conn.
Thermalink—Heaters, preheaters. Electro-Therm, Inc., Silver Spring, Md.
Thermalite—Insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.
Thermalite—High temperature paint. Tropical Paint Co., Cleveland, O.
Thermaload—Motor controllers and starters. Monitor Controller, Rockland, Mass.
Therma-Mark—Nameplates. Anodyne, Inc., Div. North Shore Nameplate, N. Miami Beach, Fla.
Thermasil—Insulation. Baldwin-Ehret-Hill, Inc., Trenton, N. J.
Thermatrol—Compressors, valves. Schnacke, Inc., Evansville, Ind.
Thermatube—Pre-insulated pipe. Flexible Tubing Corp., Guilford, Conn.
Thermax—Systems. McQuay, Inc., Minneapolis, Minn.
Thermek—Tubing, aftercoolers, chillers, coils, condensers, coolers, exchangers, preheaters, surface cooling. Heatron, Inc., York, Pa.
Thermidaire—Furnaces, heaters, heating and ventilating units, air conditioning units. Campbell Co., E. K., Kansas City, Mo.
Thermo—Expansion valves. Alco Valve Co., St. Louis, Mo.
Thermobank—Systems, compressors. Kramer Trenton Co., Trenton, N. J.
Thermobank-Compressors—Hot gas defrosting systems for refrigeration. Kramer Trenton Co., Trenton, N. J.
Thermobestos—Pipe, boiler and tank insulation. Johns-Manville Corp., New York, N. Y.
Thermo Clix—Switches. Nason Co., Clarkston, Mich.
Thermodulor—Control systems. Carvell Heat Equipment Co., Los Angeles, Calif.
Thermoflex—Strainers, radiator orifices, traps, valves. Cashin Co., W. D., Boston, Mass.
Thermoflow—Ventilators. Western Engineering & Mfg. Co., Los Angeles, Calif.
Thermo Grip—Torches. Ideal Industries, Inc., Sycamore, Ill.
Thermoguide—Thermometers. Taylor Instrument Companies, Rochester, N. Y.
Thermo-Humidigraph—Recorder-controllers. Bristol Co., The, Waterbury, Conn.
Thermoil-Granodine—Protective coatings. Amchem Products, Inc., Ambler, Pa.
Thermojet—Systems, heaters. International Boiler Works Co., The, East Stroudsburg, Pa.
Thermo-Kleen—Treatment. Acme Chemical Co., Milwaukee, Wis.
Thermolevel—Liquid level switches. Watkins Co., J. E., Maywood, Ill.
Thermolite—Plastics, powders and resins. Metal & Thermit Corp., Rahway, N. J.
Thermolier—Unit heaters. Grinnell Co., Inc., Providence, R. I.
Thermomelt—Temperature indicator-controllers. Markal Co., Chicago, Ill.
Therm-O-Mite—Valves. Beacon Brass Co., Waltham, Mass.
Thermopane—Windows. Libbey-Owens-Ford Glass Co., Toledo, O.
Thermoramic—Thermostats. General Controls Co., Glendale, Calif. and Skokie, Ill.
Thermoseal—Windows. Rusco, A Div. of the F. C. Russell Co., Pandora, O.
Thermoswitch—Thermostats, regulators. Fenwal, Inc., Ashland, Mass.
Thermotile—Underground piping conduits, underground pipe insulation. Porter & Co., Inc., H. W., Newark, N. J.
ThermoTrode—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.
Therm-O-Trol—Combustion control systems. Instruments, Inc., Tulsa, Okla.
Thermotrol—Valves. Sterling, Inc., Milwaukee, Wis.
Therm-O-Tron—Electric pipe thawers. Trindl Products, Ltd., Chicago, Ill.
Thermovent—Unit ventilators. Nesbitt, Inc., John J., Philadelphia, Pa.
Thermox—Soot destroyers. Acme Chemical Co., Milwaukee, Wis.
Thermwire—Cables. Wiegand Co., Edwin L., Pittsburgh, Pa.
Thermxchanger—Condensers, converters, coolers, heaters, exchangers. Cooley Co., E. C., San Francisco, Calif.
Thick Coat—Protective coatings. Pennsalt Chemicals Corp., Philadelphia, Pa.
Thick or thin—Cement and compounds. Jet-Lube, Inc., Burbank, Calif.
Thinline—Unitary air conditioners. General Electric Co., Room Air Conditioner Dept., Major Appliance Div., Louisville, Ky.
Thin Man—Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.
Thin Tube—Radiation. National-U.S. Radiator Div., Crane Co., Johnstown, Pa.
Thor—Belting. Goodyear Tire & Rubber Co., Akron, O.
Thorobred—V belt drives. Dayco Corp., Dayton, O.
Thoro-Mix—Burners. Power-Flame Div., Inc., Grandview, Mo.
Thread-O-Ring—Pipe flanges. T. D. Williamson, Inc., Tulsa, Okla.
Thread-Tite—Cement and compounds. Armite Laboratories, Los Angeles, Calif.
Thred-O-Matic "22" & "44"—Machines, pipe cutting. Collins Machinery Corp., Monterey Park, Calif.
Thredolets—Fittings. Bonney Forge & Tool Wks., Allentown, Pa.
3C—Motor controls. Clark Controller Co., Cleveland, O.
360—Pipe repair clamps. Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa.
3M—Cements and compounds, insulation, plastic pipe. Minnesota Mining & Mfg. Co., St. Paul, Minn.
3 Way Weather-Flo—Thermostats. Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Thrifti-Tower—Cooling towers. Marlo Coil Co., St. Louis, Mo.
Thriftmaster—Convection radiation. General Heating Products Co., Philadelphia, Pa.
Thriftmaster—Water softeners. Modern Div., Water Equipment Co., Freeport, Ill.
33-Series—Cooling towers. Havens Cooling Tower, Div. of Havens Structural Steel Co., Kansas City, Mo.
Throway—Air filters. American Air Filter Co., Inc., Louisville, Ky.
Thunder-Twist—Drills. New England Carbide Tool Co., Inc., Medford, Mass.
Thur-Ma-Lox—Coatings. Dampney Co., Boston, Mass.
TI-CO—Galvanized sheet steel. Inland Steel Co., Chicago, Ill.
TI-CO—Galvanized sheet steel. Inland Steel Products Co., Milwaukee, Wis.
Ticotherm—Boilers. Titusville Iron Works Co., The, Titusville, Pa.
Tiger—Packing. Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., Cambridge, Mass.
Tile-Cote—Protective coatings for metals. Wilbur & Williams Co., Norwood, Mass.
Tillotson—Steam traps. Henry Owens & Co., Inc., Cranston, R. I.
Tilt Trap—Steam traps. Nason Co., Clarkston, Mich.
Time-O-Stat—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Tin-Ezy—Coatings, solder and fluxes. Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Tinol—Solder and fluxes. American Solder & Flux Co., Philadelphia, Pa.
Tiny—Traps. Nason Co., Clarkston, Mich.
Titan—Traps. Nason Co., Clarkston, Mich.
Titan—Boilers. Titusville Iron Wks. Co., The, Titusville, Pa.
Tite Kote—Sheets. Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Tite Seal—Cement and compounds. Radiator Specialty Co., Charlotte, N. C.
Tom Thumb Pipe Master—Pipe machines. Oster Mfg. Co., Wickliffe, O.
Tonrac—Compressors. American-Standard Industrial Div., Detroit, Mich.
Tool-Arc—Electrodes. Alloys Rods Co., York, Pa.
Toolweld—Electrodes. Lincoln Electric Co., Cleveland, O.
Top-Aire—Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Torchweld—Regulators, torches, welding and cutting apparatus. National Cylinder Gas Div. of Chemetron Corp., Chicago, Ill.
Tork Master—Switches. Tork Time Controls, Inc., Mt. Vernon, N. Y.
Tork-Master—Operators. General Controls Co., Glendale, Calif.
Tork Weather Control—Switches. Tork Time Controls, Inc., Mt. Vernon, N. Y.
Torpedo—Dehydrators, filters. Imperial-Eastman Corp., Chicago, Ill.
Torq-Stop—Wrenches. Richmont, Inc., Monrovia, Calif.
Torque-Arm—Reducers, drives. Dodge Mfg. Corp., Mishawaka, Ind.
T.O. Silencer—Sound absorbers. Hansson, Inc., Elof, Acoustical Div., New York,

N. Y.

Totalume—Paint. Wilbur & Williams Co., Norwood, Mass.

Totrust—Protective coatings, enamels and lacquers. Wilbur & Williams Co., Norwood, Mass.

Tower Gray—Protective coatings for metals. The Debevoise Co., Brooklyn, N. Y.

Trace—Refrigerant leak detectors. Highside Chemicals, Inc., Clifton, N. J.

Tramrail—Conveyors. Cleveland Crane & Eng. Co., Wickliffe, O.

Transaire—Ventilators. Western Engineering & Mfg. Co., Los Angeles, Calif.

Transaire—Transmitters. Taylor Instrument Companies, Rochester, N. Y.

Transcope—Regulators. Taylor Instrument Companies, Rochester, N. Y.

Transet—Regulators. Taylor Instrument Companies, Rochester, N. Y.

Transflex—Plastic tubing. Irvington Div., Minnesota Mining and Mfg. Co., Freehold, N. J.

Transhield—Pipe wrap. Johns-Manville Corp., New York, N. Y.

Transite—Pipes, ducts and duct fittings, sheets and board, underground piping conduits. Johns-Manville Corp., New York, N. Y.

Trans-Pac—V belt drives. Indus Corp., Indianapolis, Ind.

Transparent—Analyzers, gages, kits, meters, switches, testers, tubes, manometers. Dwyer Mfg. Co., F. W., Michigan City, Ind.

Trantex—Pipe wrap. Johns-Manville Corp., New York, N. Y.

Trap-Dri—Dehydrators. Controls Co. of America, Heating & Air Conditioning Div., Milwaukee, Wis.

Treet-O-Control—Steam system and water treatment, pumps. B-I-F Industries, Proportioneers Div., Providence, R. I.

Treet-O-Unit—Feeders, pumps, water treatment. B-I-F Industries, Proportioneers Div., Providence, R. I.

Trenchliners—Trenching machines. Parsons Co., Div. of Koehring Co., Newton, Ia.

Trentweld—Tubing, pipe. Crucible Steel Co. of America, Pittsburgh, Pa.

Triad—Stocks and dies. Nye Tool Co., Chicago, Ill.

Tribune—Hose. Continental Rubber Wks., Erie, Pa.

Tricalite—Insulation. Mundet Cork Corp., North Bergen, N. J.

Tri-Clad—Motors. General Electric Co., Apparatus Dept., Schenectady, N. Y.

Trident—Meters. Neptune Meter Co., New York, N. Y.

Tri-Flex—Registers, grilles. Tuttle & Bailey, Div. of Allied Thermal Corp., New Britain, Conn.

Tri-Flux—Motors. Redmond Co., Inc., Owosso, Mich.

Tri-Flux—Solder. Wolfe-Kote Co., Inc., Sheboygan, Wis.

Tri-Guard—Protective coatings. Foster Co., Benjamin, Philadelphia, Pa.

Tri-Lug—Unions. Rockwood Sprinkler Co., Worcester, Mass.

Trimline—Radiation. Vulcan Radiator Co., Hartford, Conn.

Trimo—Cutters. Armstrong Bros. Tool Co., Chicago, Ill.

Trimo—Pipe wrenches. Trimount Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.

Trimo Alloy—Pipe wrenches. Trimount Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.

Trimo Spiral Grip—Pipe wrenches. Trimount Mfg. Co., Div. of St. Pierre Chain Corp., Worcester, Mass.

Trio-Stat—Heating systems, thermostats. Johnson Service Co., Milwaukee, Wis.

Triple-A—Enamels and lacquers, paint, protective coatings. Quigley Co., Inc., New York.

Triple-lok—Fittings. Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.

Triplex—Stocks and dies. Nye Tool Co., Chicago, Ill.

Tripl-Aire—Grilles, registers. Hart & Cooley Mfg. Co., Holland, Mich.

Tri-Rotor—Pumps. Yale & Towne Mfg. Co., White Plains, N. Y.

Tri-Sul-Ite—Pipe and tubing insulation. Ziegler & Co., G. S., Great Neck, N. Y.

Tri-Weld—Pipe fittings. Ladish Co., Tri-Clover Div., Kenosha, Wis.

Trojan—Boilers. Burnham Corp., Irvington, N. Y.

Trojan—Boilers. Titusville Iron Wks. Co., The, Titusville, Pa.

Trojan—Stokers. Auburn Burner Co., Auburn, Ind.

Trombone—Finned surface. Nesbitt, Inc., John J., Philadelphia, Pa.

Trona—Refrigerants. American Potash & Chemical Corp., Refrigeration Dept., Los Angeles, Calif.

Tropelite—Coatings. Tropical Paint Co., Cleveland, O.

Tropic-Aire—Heaters. Albion Div., McGraw-Edison Co., Albion, Mich.

Tropic-Aire—Unitary air conditioners. McGraw-Edison Co., Transportation Cooling Div., Chicago.

Tropic-Breeze—Burners. Dalzen Mfg. Co., St. Clair, Mich.

Tropilux—Enamels and lacquers. Tropical Paint Co., Cleveland, O.

Tru-Air—Unitary air conditioners, finned surface systems, condensers, cooling towers, eliminators, exchangers, heaters. Blazer Corp., Passaic, N. J.

True Heat—Radiation. Pacific Steel Boiler Div., Crane Co., Johnstown, Pa.

True-Pitch Level—Tools. Dreier Bros., Inc., Chicago, Ill.

Truespot—Testers. Bacharach Industrial Instrument Co., Pittsburgh, Pa.

Truflex—Bi-metals. General Plate Div., Metals & Controls Corp., Attleboro, Mass.

Truflex—Drives, v-belts. Gates Rubber Co., The, Denver, Colo.

Truflex—Thermostatic bi-metals. Texas Instruments Inc., Metals & Controls Div., Attleboro, Mass.

Tru-Grip—Pulleys and sheaves. Gates Rubber Co., Denver, Colo.

Truk-Cel—Unit coolers. Dole Refrigerating Co., Chicago, Ill.

Truliradiant—Burners. Gold Top Heating, Inc., San Gabriel, Calif.

Truliradiant—Gas burners. Sullivan Valve & Engineering Co., Butte, Mont.

Tru-Perimeter—Heating systems. Webster & Co., Warren, Camden, N. J.

Tru-Set—Fasteners. Ramset Fastening System, Winchester-Western Div., Olin-Mathieson Chemical Corp., New Haven, Conn.

Try-Me—Regulators, filters, strainers, valves. Tryco Products, Inc., Westfield, Mass.

Tube-alloy—Electrodes. McKay Co., Pittsburgh, Pa.

Tube-in-Strip—Tubing. Revere Copper & Brass, Inc., New York, N. Y.

Tuckaway—Unitary air conditioners. Perfection Div., Hupp Corp., Cleveland, O.

Tuff-Bond—Adhesives, cement, insulation. Moore Inc., Goodloe E., Danville, Ill.

Tufflex—Bases and pads, insulation. Wood Conversion Co., St. Paul, Minn.

Tuf-flex—Gage and sight glasses. Libbey-Owens-Ford Glass Co., Toledo, O.

Tuff-Weld—Fasteners, hangers. Moore Inc., Goodloe E., Danville, Ill.

Tufline—Valves. Continental Mfg. Co., Cincinnati, O.

Tuf-On—Protective coatings. Brooklyn Paint & Varnish Co., Inc., Brooklyn, N. Y.

Tulox—Tubing. Extruded Plastics, Inc., Norwalk, Conn.

Tumblin—Bolts. Star Expansion Industries Corp., Mountainville, N. Y.

Turbaire—Refrigerating condensers, finned surface. Acme Industries, Inc., Jackson, Mich.

Turbinair—Motors. Joy Mfg. Co., Pittsburgh.

Turbo—Air washers. Bayley Blower Co., A Div. of the Green Fuel Economizer Co., Inc., Milwaukee, Wis.

Turbo-Aire—Overfire air jets, smoke alarms. Canton Stoker Corp., Canton, O.

Turbo-Fire—Burners. Gordon & Piatt, Inc., Winfield, Ks.

Turbomaster—Air compressors. York Div., Borg-Warner Corp., York, Pa.

Turbo-Ring—Burners. Gordon & Piatt, Inc., Winfield, Kans.

Turbo Vane—Fans and blowers. Westinghouse Electric Corp., Sturtevant Div., Boston, Mass.

Turbulaire—Dryers. Western Precipitation Corp., Los Angeles, Calif.

Turcoat—Coatings. Turco Products, Inc., Wilmington, Calif.

Twindow—Heating insulating windows. Pittsburgh Plate Glass Co., Pittsburgh, Pa.

Twin G-Fin—Preheaters. Griscom-Russell Co., Massillon, O.

Twinner—Pipe welding clamps. Arnson Machine Co., Arcade, N. Y.

Twin Seal—Check valves, gage testers. Mansfield & Green, Inc., Cleveland, O.

Twinsulation—Building insulation. National Gypsum Co., Buffalo, N. Y.

Two-Tank-T—Oil burner filters. Barclay, Inc., Robert, Chicago, Ill.

Two-Way Lock Nut—Lock nuts and washers. Mac-Lean-Fogg Lock Nut Co., Chicago, Ill.

Tygon—Protective coatings, gaskets, plastic tubing. United States Stoneware Co., New York, N. Y.

Tygon—Protective coatings, plastic tubing. **United States Stoneware Co., Plastics & Synthetics Div., Akron, O.**

Tylox—Pipe couplings. United States Stoneware Co., New York, N. Y.

Tyte-Unyte—Cement and compounds, sealing compounds. Whitlam Mfg. Co., J. C., Wadsworth, O.

U-Brand—Fittings. Union Malleable Mfg. Co., Ashland, O.

UNXLD—Damper set regulators. Duro-Dyne Corp., Farmingdale, L.I., N. Y.

USG—Louvers and shutters. United States Gypsum Co., Chicago, Ill.

U. S. S.—Angles, sheets. United States Steel Co., Pittsburgh, Pa.

USS—Pipe, tubing. National Tube Div., **United States Steel Corp., Pittsburgh, Pa.**

U-S-S—Sheets, angles. Columbia-Geneva Steel Div., United States Steel Corp., San Francisco, Calif.

U. S.—Valves. Powell Co., Wm., The, Cincinnati, O.

U. S. Royal—Packing. United States Rubber Co., New York, N. Y.

Ucilon—Protective coatings, enamels and lacquers, tank linings, high temperature paint. Metal & Thermit Corp., Rahway, N. J.

Ucon—Lubricants, oils, fluorocarbon refrigerants. Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

U-Cote—Pipe fittings. Union Malleable Mfg. Co., Ashland, O.

U-in-Tah—High temperature paint. Valdura Div., American-Marietta Co., Chicago, Ill.

Ulok—Air filters, frames for holding panel type air filters. Union Carbide Development Co., Div. of Union Carbide Corp., New York, N. Y.

Ultra-Aire—Filters. Mine Safety Appliances Co., Pittsburgh, Pa.

Ultra-filtration—Air filters. Wheelabrator Corp., Mishawaka, Ind.

Ultrafine—Insulation. Gustin-Bacon Mfg. Co., Kansas City, Mo.

Ultraflo—Protective coatings, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. J.

Ultralite—Insulation. Gustin-Bacon Mfg. Co., Kansas City, Mo.

Ultra Solvex—Chemical service for scale removal, chemical treatment to remove scale. Chemical Solvent Co., Birmingham, Ala.

Ultra-Viscoson—Viscosimeters. Bendix Aviation Corp., Cincinnati Div., Cincinnati, O.

Una-Dyn—Dehumidifiers, industrial dryers, indicator-controllers, dehydrators, indicators, recorder-controllers, recorders. Universal Dynamics Corp., Arlington, Va.

Unarco—Insulation, gaskets, packing, insulating cement, condensers, heaters, radiation, surface cooling & heating, air conditioning units. Union Asbestos & Rubber Co., Chicago, Ill.

Unbrako—Parts for heating & air conditioning equipment, repair plugs. Standard Pressed Steel Co., Jenkintown, Pa.

Underflow—Cooling Towers. Marley Co., The, Kansas City, Mo.

Unibestos—Insulation. Fibrous Products Div., Union Asbestos & Rubber Co., Bloomington, Ill.

Uni-Built—Pumps. Bell & Gossett Co., Morton Grove, Ill.

Uni-cast—Motors. Redmond Co., Inc., Owosso, Mich.

Unichiller—Compressors. Vilter Mfg. Co., The, Milwaukee, Wis.

Unichrome—Protective coatings, enamels and lacquers, tank linings. Metal & Thermit Corp., Rahway, N. J.

Uniclosed—Electric motors. U. S. Electrical Motors, Inc., Los Angeles, Calif.

Unicoils—Finned surfaces. Clarage Fan Co., Kalamazoo, Mich.

Unicon—Refrigerating condensers. Kramer Trenton Co., Trenton, N. J.

Unicon-Compressor—Refrigerating compressors. Kramer Trenton Co., Trenton, N. J.

Uni-Crest—Insulation. United Cork Companies, **Kearney, N. J.**

Unifil—Fittings and bushings. Scully Signal Co., Melrose, Mass.

UNIFIL Systems—Connectors. Scully Signal Co., Melrose, Mass.

Uniflare—Fittings. Scovill Mfg. Co., Waterbury, Conn.

Uni-Flo—Fume disposal hoods. Schneible Co., Claude B., Detroit, Mich.

Uni-Flo Air Valves—Valves. Barber-Colman Co., Rockford, Ill.

Uni-flo—Diffusers, grilles, mixing units, regulators, registers. Barber-Colman Co., Rockford, Ill.

Uniflow—Oil burners. Ace Engineering Co., Chicago, Ill.

Uniloc—Vitrified clay pipe. United States Concrete Pipe Co., Universal Sewer Pipe Div., Cleveland, O.

Unimatic—Water softeners. Modern Water Equipment Co., Freeport, Ill.

UniMatic—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.

Unimount—Pumps. March Mfg. Co., Inc., Skokie, Ill.

Union—Valves. Powell Co., Wm., The, Cincinnati, O.

Union—Incinerators. Syrall Mfg. Co., Syracuse, N. Y.

Unipack—Welding fume exhausters, centrifugal fans. American Machine Products

Co., Marshalltown, Ia.

Unipak—Electrical capacitors. Sprague Electric Co., North Adams, Mass.

Unipar—Pipe joint cement and compounds. Parker Fittings & Hose Div., Parker-Hannifin Corp., Cleveland, O.

Unipump—Pumps. Weinman Pump Mfg. Co., Columbus, O.

Uni-Resonator—Sound absorbers. Hansson, Inc., Elof, Acoustical Div., New York, N. Y.

Uniseal—Electric motors. Franklin Electric Co., Inc., Bluffton, Ind.

Unishears—Electric shears. Stanley Electric Tools Div., The Stanley Works, New Britain, Conn.

Uni-Silencer—Absorbers. Elof Hansson, Inc., Acoustical Div., New York, N. Y.

Unisorb—Bases and pads. Felters Company, The, Boston, Mass.

Unistage—Aftercoolers. Schramm, Inc., West Chester, Pa.

UniStoker—Stokers. Detroit Stoker Co., Monroe, Mich.

Uni-Strainer—Strainers. Perfecting Service Co., Charlotte, N. C.

Unitair—Air compressors. Joy Mfg. Co., Pittsburgh, Pa.

Unitaire—Air conditioning units. Westinghouse Electric Corp., Air Conditioning Div., Staunton, Va.

Unitem—Heaters. Bell & Gossett Co., Morton Grove, Ill.

Unitherm—Unit heaters. Clarage Fan Co., Kalamazoo, Mich.

Unit Fin—Radiation. Vapor Heating Corp., Chicago, Ill.

Unitite—Valves. Hanna Engineering Wks., Chicago, Ill.

Unit-Line—Pumps. Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., Pasadena, Calif.

Uni-Torque Lock Nut—Lock nuts and washers. Mac-Lean-Fogg Lock Nut Co., Chicago, Ill.

UniTrane—Air conditioning units and coolers. Trane Co., The, La Crosse, Wis.

Uni-Trap—Steam traps. Perfecting Service Co., Charlotte, N. C.

Unitrol—Boards. Cutler-Hammer, Inc., Milwaukee, Wis.

Universal—Benders. Hossfeld Mfg. Co., Winona, Minn.

Universal—Burners. Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., Rockford, Ill.

Universal—Cast iron pipe. Central Foundry Co., New York, N. Y.

Universal—Centrifugal pumps. Bell & Gossett Co., Morton Grove, Ill.

Universal—Clamps. Aeroquip Corp., Marman Div., Los Angeles, Calif.

Universal—Packing. Johns-Manville Corp., New York, N. Y.

Universal—Pumps. Wright Mfg. Co., Phoenix, Ariz.

Universal—Regulators. Dockson Corp., Detroit, Mich.

Universal—Speed reducers and increasers. Link-Belt Co., Chicago, Ill.

Universal CP—Drills. Chicago Pneumatic Tool Co., New York, N. Y.

Universal Unaflow—Engines. Skinner Engine Co., Erie, Pa.

Univers-L-Mount—Pumps. March Mfg. Co., Inc., Skokie, Ill.

Uni-Wash—Dust collectors. Newcomb-Detroit Co., Detroit, Mich.

U-Pump—Chemical feeders. Hills-McCanna Co., Chicago, Ill.

Urefoam—Insulating cement, pipe insulation. Atlas Mineral Products Co., Mertztown, Pa.

Urethane—Protective coatings. Gates Engineering Co., Wilmington, Del.

Urethane—Protective coatings. Saran Lined Pipe Co., Ferndale, Mich.

UsAIRco—Air conditioning equipment, fans, exhauster units, blowers, condensers, surfaces, heaters. U. S. Air Conditioning Corp., Delaware, O.

Uscolite—Plastic pipe, fittings, plastic valves. United States Rubber Co., New York, N.Y.

Util-i-Torch—Torches. Turner Brass Works, The, Sycamore, Ill.

Utilitube—Aluminum tubing. Aluminum Co. of America, Pittsburgh, Pa.

Utility—Blowers. American-Standard Industrial Div., Detroit, Mich.

Utility—Roof ventilators. Arex Co., Chicago.

Utility—Heaters. Wing Mfg. Co., L. J., New York, N. Y.

V Line—Tools. Millers Falls Co., Greenfield, Mass.

VP-Ex—Ventilators. New York Blower Co., Chicago, Ill.

VRC—Air Conditioning units. Drayer-Hanson Div., Crane Co., Los Angeles, Calif.

V*S—Changers. Reliance Electric & Engineering Co., Cleveland, O.

Vac-Master—Vacuum cleaners. Cincinnati Fan and Ventilating Co., Cincinnati, O.

Vacu-Flo—Fittings. H-P Products, Inc., Louisville, O.

Vacsul—Oil. Mobil Oil Co., Inc., New York, N. Y.

Vacumatic—Ejectors, pumps. Whittington Pump & Engineering Corp., Indianapolis.

Vacuum Cold Plate—Coils and panels. Dole Refrigerating Co., Chicago, Ill.

Vacuum Filter—Water filters. B-I-F Industries, Proportioneers Div., Providence, R. I.

Vacuumstat—Switches. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Valcalox—Dampers, regulators. Young Regulator Co., Cleveland, O.

Valuaire—Air diffusers. Auer Register Co., Cleveland, O.

Value Line—Air diffusers. Auer Register Co., Cleveland, O.

Valvactor—Valve operators. Foxboro Co., Foxboro, Mass.

Valvatrol—Valves, diaphragm. Squires Co., C. E., The, Cleveland, O.

Valvent—Roof ventilators. Swartwout Co., Cleveland, O.

Valvrator—Valves. Fischer & Porter Co., Warminster, Pa.

Vanco—Louvers and shutters. Van Noorden Co., E., Boston, Mass.

Vanco Exhaustmaster—Ventilators. Van Noorden Co., E., Boston, Mass.

Vanco Firevent—Ventilators. Van Noorden Co., E., Boston, Mass.

Vanco "QR"—Ventilators. Van Noorden Co., E., Boston. Mass.

Vanco Roofline—Ventilators. Van Noorden Co., E., Boston, Mass.

Vanco Simplex—Ventilators. Van Noorden Co., E., Boston, Mass.

Vanco Sleek-Line—Ventilators. Van Noorden Co., E., Boston, Mass.

Vanco Sun Shades—Louvers. Van Noorden Co., E., Boston, Mass.

Vanco Superflo—Ventilators. Van Noorden Co., E., Boston, Mass.

Vanco Upblast—Ventilators. Van Noorden Co., E., Boston, Mass.

Van Cor—Ducts and duct fittings, hose to pipe fittings, plastic pipe fittings, hoods, pipe joints, plastic unions, plastic pipe, plastic sheets, valves, pipe nipples, pipe flanges, tank linings, tanks. Colonial Plastics Mfg. Co., Industrial Div., Cleveland, O.

Vane Rail—Air scoops, vanes. Duro-Dyne Corp., Farmingdale, L.I., N. Y.

Vanguard—Pumps. Owatonna Tool Co., Owatonna, Minn.

Vapco—Compounds. Garman Co., Inc., The, St. Louis, Mo.

Vapco-Phos Nuggets—Water treatment. Garman Co., Inc., The, St. Louis, Mo.

Vapco Slime-X—Water treatment. Garman Co., Inc., The, St. Louis, Mo.

Vape-Sorber—Filters. Selas Corp. of America, Dresher, Pa.

Vapomatic—Hot gas defrosting systems. Recold Corp., Los Angeles, Calif.

Vaporene—Compound and water treatment. Metropolitan Refining Co., Inc., Long Island City, N. Y.

Vapor-Clarkson—Heating and process boilers. Vapor Heating Corp., Chicago, Ill.

Vaporstat—Switches. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Vapowall—Insulation, vapor barriers. MMM, Inc., Houston, Tex.

Vari-Basic—Fan housings. Torrington Mfg. Co., The, Torrington, Conn.

Varidrive—Speed changers. U. S. Electrical Motors, Inc., Los Angeles, Calif.

Vari-Speed Drives—Speed changers. Reeves Pulley Co., Div. of Reliance Electric & Engineering Co., Columbus, Ind.

Vari-Temp—Air conditioning units. Dunham-Bush, Inc., West Hartford, Conn.

Vari-Vac—Heating systems, control systems. Dunham-Bush, Inc., West Hartford, Conn.

Vaultmaster—Air conditioning units. Haertel Co., Walter, Minneapolis, Minn.

Vcon—Oil. Union Carbide Chemicals Co., Div. of Union Carbide Corp., New York, N. Y.

Veco—Analyzers, combustion testing kits, recorders, indicators, thermometers. Victory Engineering Corp., Union, N. J.

Vee-Aire—Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.

Veeco—Leak detectors, gages, valves. Vacuum-Electronics Corp., Plainview, L.I., N. Y.

Veegroo—Valves. General-American Valve Co., Corona Del Mar, Calif.

Vee Jet—Spray nozzles. Spraying Systems Co., Bellwood, Ill.

Veelos—V-belts. Manheim Mfg. & Belting Co., Manheim, Pa.

Velometer—Air velocity meters. Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., Chicago.

Velvetrol—Valves. J. D. Gould Co., Indianapolis, Ind.

Ventafil—Fittings and bushings. Scully Signal Co., Melrose, Mass.

VENTALARM—Alarms, gages, fittings and bushings. Scully Signal Co., Melrose, Mass.

Ventbestus—Connections, duct, flexible. Ventfabrics, Inc., Chicago, Ill.

Ventfab—Flexible duct connections. Ventfabrics, Inc., Chicago, Ill.

Ventflo—Valves. Quality Specialty Co., Inc., Camden, N. J.

Ventglas—Connections, duct, flexible. Ventfabrics, Inc., Chicago, Ill.

Ventlok—Doors and panels, regulators, fusible links, parts for heating and air conditioning equipment. Ventfabrics, Inc., Chicago, Ill.

Vent-Rite—Radiator valves. Anderson Products, Inc., Newtonville, Mass.

Vent Set—Wall fan ventilators. DeBothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.

Ventura—Fans. American-Standard Industrial Div., Detroit, Mich.

Venturafin—Unit heaters. American-Standard Industrial Div., Detroit, Mich.

Venturi—Fan housings. Commercial Shearing & Stamping Co., Youngstown, O.

Venturi—Meters, nozzles. B-I-F Industries, Builders-Providence Div., Providence, R. I.

Venturi-Flo—Refrigerant distributors. Alco Valve Co., St. Louis, Mo.

Venturi-Flo—Air diffusers. Barber-Colman Co., Rockford, Ill.

Venturi One—Fittings. Taco Heaters, Inc., Cranston, R. I.

Venturi-Top—Caps, roof ventilators. Walker Mfg. & Sales Co., St. Joseph, Mo.

Vent-Vac—Heating systems. Anderson Products, Inc., Cambridge, Mass.

Vent-X-It—Roof ventilators. Octagon Ventilator Mfg. Co., Jackson, Tenn.

Ventyvinyl—Connections. Ventfabrics, Inc., Chicago, Ill.

Verco—Insulating cement. Nelson Mfg. Co., B. F., Minneapolis, Minn.

Verithin-Microrold—Steel sheets. Washington Steel Corp., Washington, Pa.

Vermiculite—Insulation. Nelson Mfg. Co., B. F., Minneapolis, Minn.

Vernier-Set—Time switches. Automatic Timing & Controls, Inc., King of Prussia, Pa.

Versatrol—Indicators. Assembly Products, Inc., Chesterland, O.

Vers-Cap—Vent flue caps. Leslie Welding Co., Inc., Franklin Park, Ill.

Versene—Boiler cleaning compounds. Dow Chemical Co., The, Midland, Mich.

Vertex—Paint, sealing compounds. Whitlam Mfg. Co., J. C., Wadsworth, O.

Vertiflow—Unit heaters. Young Radiator Co., Racine, Wis.

V-Flat—Pulleys and sheaves. Dayco Corp., Dayton, O.

Vibracork—Bases and pads. Korfund Co., Inc., Westbury, L. I., N. Y.

Vibraducer—Absorbers. Atlantic Metal Hose Co., Inc., New York, N. Y.

Vibra Free—Absorbers. Williamson Co., The, Cincinnati, O.

Vibra grate—Stokers. American Engineering Co., Div. of United Industrial Corp., Philadelphia, Pa.

Vibra-Joint—Pipe joints. Saussé & Co., M. W., Los Angeles, Calif.

Vibra-Mount—Vibration bases. American Felt Co., Glenville, Conn.

Vibrashock—Bases and pads. Robinson Technical Products, Inc., Teterboro, N. J.

Vibra sorber—Vibration absorbers. Flexonics Corp., Subsid. of Calumet & Hecla, Inc., Bartlett, Ill.

Vibrastop—Duct connections. Grant Wilson, Inc., Chicago, Ill.

Vibraswitch—Detectors. Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.

Vibratamer—Vibration absorbers. Allied Metal Hose Co., Long Island City, N. Y.

Vibrex—Bases and pads, hangers and supports. Saussé & Co., M. W., Los Angeles, Calif.

VibrJoint—Absorbers. LaFavorite Rubber Mfg. Co., Hawthorne, N. J.

Vibrograph—Vibration detectors. Korfund Co., Inc., Westbury, L. I., N. Y.

Vibro-Hangers—Pipe hangers and supports, absorbers. Korfund Co., Inc., Westbury, L. I., N. Y.

Vibro-Isolators—Bases and pads, noise elimination for cooling towers, vibration absorbers. Korfund Co., Inc., Westbury, L. I., N. Y.

Vibrometer—Vibration detectors. Korfund Co., Inc., Westbury, L. I., N. Y.

Vichrome—Coatings, enamels. Interchemical Corp., Finishes Div., Newark, N. J.

Victor—Steam traps. Wright-Austin Co., Detroit, Mich.

Victor—Water heaters. Cleveland Heater Co., Inc., Cleveland, O.

Victory—Registers. Register & Grille Mfg. Co., Inc., Brooklyn, N. Y.

Vidigage—Ultrasonic testing equipment. Branson Instruments, Inc., Stamford, Conn.

Viking—Welders. Mid-States Welder Mfg. Co., Chicago, Ill.

Vim—Belting, gaskets, leather packing. Houghton & Co., E. F., Philadelphia, Pa.
Vim Tred—Leather belting. Houghton & Co., E. F., Philadelphia, Pa.
Vinsynite—Coatings. Thompson and Co., Oakmont, Pa.
Vinyl—Protective coatings. Watson-Standard Co., Pittsburgh, Pa.
Vinylgrip—Adhesives for pipe covering. Adhesive Products Corp., New York, N. Y.
Visaflame—Controls. Mercoid Corp., The, Chicago, Ill.
Viscograph—Viscosimeters. Brabender Corp., Rochelle Park, N. J.
Viscomparator—Viscosimeters. Bendix Corp., Cincinnati Div., Cincinnati, O.
Viscorator—Viscosimeters. Fischer & Porter Co., Warminster, Pa.
Visi-Flare—Flaring tools for tubing. Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Viso Flo—Sight glasses. OPW-Jordan Corp., Cincinnati, O.
Visoleak—Leak detectors. Allin Mfg. Co., Chicago, Ill.
Vistex—Gaskets, rubber and synthetic packing. American Felt Co., Glenville, Conn.
Visutac—Tachometers. Boulin Instrument Corp., Pelham, N. Y.
Vitalic—Hose. Continental Rubber Wks., Erie, Pa.
Vitalloy—Wrenches. Billings & Spencer Co., Hartford, Conn.
Vitect—Protective coatings for metals. Benjamin Foster Co., Philadelphia, Pa.
Vitreon—Pipe. Robinson Clay Products Co., Inc., The, Akron, O.
Vitricel—Refractories. Carey Mfg. Co., Philip, The, Cincinnati, O.
Vitrilan—Protective coatings for metals, enamels and lacquers. Interchemical Corp., Finishes Div., Newark, N. Y.
Vitroliner—Pipe and fittings, stacks and chimneys. Condensation Engineering Corp., Chicago, Ill.
Vix-Syn—Rubber and synthetic packing. Houghton & Co., E. F., Philadelphia, Pa.
V-Meth-L—Refrigerants. Virginia Smelting Co., West Norfolk, Va.
Voladjuster—Dampers. Barber-Colman Co., Rockford, Ill.
Vol-O-Flo—Meters. National Instrument Laboratories, Inc., Washington, D. C.
Vol-Pac—Packing. Houghton & Co., E. F., Philadelphia, Pa.
Voltreet—Treatment. Acme Chemical Co., Milwaukee, Wis.
Vortex—Pumps. Lawrence Pump and Engine Co., Lawrence, Mass.
V-Series—Cooling towers. Havens Cooling Tower, Div. of Havens Structural Steel Co., Kansas City, Mo.
V-to-V—Pulleys and sheaves. Dayco Corp., Dayton, O.
Vulcalock—Linings, tank; adhesives. Goodrich Industrial Products Co., B. F., Akron, O.
Vulcan—Stands, tongs, vises, wrenches. Williams & Co., J. H., Buffalo, N. Y.
Vulcan—Stokers. Canton Stoker Corp., Canton, O.
Vulcan Superior—Tongs, vises, wrenches. Williams & Co., J. H., Buffalo, N. Y.
Vulcatex—Caulking and sealing compounds. Horn Companies, A. C., Subsid. of Sun Chemical Corp., New York, N. Y.
Vulco—Pulleys. Gates Rubber Co., Denver, Colo.
Vulco Ropes—Belts, drives. Gates Rubber Co., Denver, Colo.
Vulcomount—Pulleys. Gates Rubber Co., Denver, Colo.
Vyflex—Tank linings. Kaykor Industries, Inc., Yardville, N. J.

W. & McD.—Strainers. Watson & McDaniel Co., Philadelphia, Pa.
WMT—Cooling towers. Drayer-Hanson Div., Crane Co., Los Angeles, Calif.
WS—Valves. Powell Co., Wm., The, Cincinnati, O.
W & T—Chlorinators, feeders, gages, indicators. Wallace & Tiernan Inc., Belleville, N. J.
WTP—Boilers. Titusville Iron Wks. Co., The, Titusville, Pa.
W & W—Pipe hangers. Western Wire Products Co., St. Louis, Mo.
Wadco—Oil. Whitlam Mfg. Co., J. C., Wadsworth, O.
Wagener—Pumps. Canton Stoker Corp., Canton, O.
Wakefield—Coils, fittings, pipe, pumps, tanks and valves. Lead Lined Iron Pipe Co., Wakefield, Mass.
Walltube—Radiator brackets or hangers. Arjac Products Inc., Rochester, N. Y.
Walseal—Fittings, valves. Walworth Co., New York, N. Y.
Walvector—Radiation. Webster & Co., Warren, Camden, N. J.
Warco—Fuel oil treatment. Warren Refining & Chemical Co., The, Cleveland, O.
Warcolite—Enamels and lacquers. Warren Refining & Chemical Co., The, Cleveland.
Warnock—Wrenches. Lowell Wrench Co., Worcester, Mass.
Watch Dog—Meters. Gamon Meter Div., Worthington Corp., Newark, N. J.
Watchman—Water heaters. Vapor Heating Corp., Chicago, Ill.
Watco—Cooling towers, systems. Water Cooling Corp., New York, N. Y.
Water-Boy—Feeders, valves. Maid-O'-Mist, Inc., Chicago, Ill.
Water-King—Pumps. Peerless Pump Hydrodynamics Div., Food Machinery and Chemical Corp., Los Angeles, Calif.
Water Master—Filters. Austin Engineering & Mfg. Co., Inc., Yaleta, Tex.
Water Reducible—Enamels and lacquers. Glidden Co., The, Midwest Industrial Div., Chicago, Ill.
Water Shoot—Dust collectors. David-Ludwig Co., Detroit, Mich.
Water-Skipper—Protective coatings for metals, water treatment. Easton R. S. Corp., Brooklyn, N. Y.
Wa-Tu-Bo—Coils, steam convertors, boilers, heat exchangers, aftercoolers, water heaters, preheaters. Water Tube Boiler & Tank Co., Chicago, Ill.
Way Loctor—Doors and panels. Walsh-Hannon-Gladwin, Inc., Boston, Mass.
Wear-Arc—Electrodes. Alloy Rods Co., York, Pa.
Wear-Arc "Super WH"—Electrodes. Alloy Rods Co., York, Pa.
Wear-O-Matic—Electrodes. Alloy Rods Co., York, Pa.
Wearweld—Electrodes. Lincoln Electric Co., Cleveland, O.
Weather—Protective coatings. Minnesota Mining & Mfg. Co., St. Paul, Minn.
Weather-Analoy—Heating systems, thermostats. Johnson Service Co., Milwaukee, Wis.
Weather-Chron—Switches, control systems, regulators, thermostats. Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Weather-Flo—Thermostats, fan controls, controls for stopping and stopping pumps, control systems, heating systems, regulators. Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Weathermaker—Unitary air conditioners. Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Weather-Man—Regulators, thermostats, control systems. Automatic Devices Div. of American Machine & Metals, Inc., Sellersville, Pa.
Weathermaster—Unitary air conditioners. Carrier Air Conditioning Co., Div. of Carrier Corp., Syracuse, N. Y.
Weatherstat—Thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Weathertrol—Unitary air conditioners. Therm-Air Mfg. Co., Peekskill, N. Y.
Weatherwise—Unitary air conditioners, refrigerating condensers. Barkow Mfg. Co., Inc., Aug. G., Milwaukee, Wis.
Webco-Ray—Boilers, heaters. Western Boiler Co., Los Angeles, Calif.
Webster Moderator—Thermostats, valves. Clark-Cooper Co., Inc., CC Pump Div., Palmyra, N. J.
Weco—Plugs, steel unions. Chiksan Co., Brea, Calif.
Wedge Lock—Repair plugs for pipe. T. D. Williamson, Inc., Tulsa, Okla.
Wedge-Lock—Pipe, fittings. Robinson Clay Product Co., The, Akron, O.
Wedgeplug—Valves. Stockham Valves & Fittings, Birmingham, Ala.
Wedgemount—Vibration bases. Air-Loc Div., Clark, Cutler, McDermott Co., Franklin, Mass.
Weir—Stokers. Meyer Furnace Co., The, Peoria, Ill.
Weldaluminite—Welding compounds. Special Chemicals Corp., Ossining, N. Y.
Weldanpower—Welders. Lincoln Electric Co., The, Cleveland, O.
WeldELLS—Welding fittings. Taylor Forge & Pipe Works, Chicago, Ill.
Weld-Ends—Pipe couplings, fittings. Pipe Line Development Co., Cleveland, O.
Weldfast—Pipe joint cement and compounds. Fibercast Co., Sand Spring. Okla.
Weld-lok—Fittings. Parker Fittings & Hose Div. of Parker-Hannifin Corp., Cleveland, O.
Weldolets—Fittings. Bonney Forge & Tool Works, Allentown, Pa.
Weld-O-Vent—Welding fume exhausters. Engwald Corp., The, Inwood, Long Island, N. Y.
Weldreel—Welders, welding and cutting apparatus. United Specialties, Inc., El Dorado, Ark.
Wesco—Boilers. Wescott Snyder Mfg. Corp., Madison, N. J.
Wesco-Cool—Surface, finned, cooling; unitary air conditioners. Wescott Snyder Mfg. Corp., Madison, N. J.
Wescofin—Radiation, surface, finned, heating. Wescott Snyder Mfg. Corp., Madison, N. J.
Western—Fans, furnaces, heaters, unitary air conditioners, ventilators. Tuck-Aire Furnace Co., San Francisco, Calif.
Westernaire—Fans. Western Engineering & Mfg. Co., Los Angeles, Calif.
Western Roll-Bond—Heat exchangers. Olin Mathieson Chemical Corp., Metals Div., New York, N. Y.
West-Flex—Hose. Flexible Metal Hose Mfg. Co., Costa Mesa, Calif.
Wevelite—Insulation. Insulite Div., Minnesota & Ontario Paper Co., Minneapolis, Minn.
Whiffletree—Valves. Dahl Co., Inc., G. W., Bristol, R. I.
Whirlcone—Spray nozzles. Water Cooling Equipment Co., St. Louis, Mo.
Whirljet—Spray nozzles. Spraying Systems Co., Bellwood, Ill.
Whirlwind—Separators. Wright-Austin Co., Detroit, Mich.
Whistler—Alarms. Applied Mechanics Co., Boston, Mass.
White Star—Valves. Powell Co., Wm., The, Cincinnati, O.
Whiting Rust Cutter—Penetrant solvent. Claronex Products, Inc., Brooklyn, N. Y.
Whiz-Lock Nut—Lock nuts and washers. Mac-Lean-Fogg Lock Nut Co., Chicago, Ill.
Wigwam Thermcap—Vent flue caps. Boston Machine Works Co., Lynn, Mass.
Wilco—Bi-metals. Wilson Div., H. A., Engelhard Industries, Union, N. J.
Wilco—Pipe cutting machines. Oster Mfg. Co., Wickliffe, O.
Wimco—Tubing Cutters. Wilson Mfg. Co., Memphis, Tenn.
Wincinator—Incinerators, stacks and chimneys. Winnen Incinerator Co., Bedford, O.
Wind-A-Clamp—Hose clamps. Manufacturers Corp., Mansfield, O.
Windmaster—Fans. Acme Engineering & Mfg. Corp., Muskogee, Okla.
Windmaster—Propeller fans, ventilators. Consolidated General Products, Inc., Houston, Tex.
Wind-O-Cool—Fans. Belco Industries, Inc., St. Louis, Mo.
Wind-O-Line—Ventilators. Nesbitt, Inc., John J., Philadelphia, Pa.
Wind-O-Vent—Window ventilator and filter units. Reed Unit-Fans, Inc., New Orleans.
Wingfoil—Exhausters, fans. Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Wingjet—Ventilators. Wing Mfg. Co., L. J., Div. of Aero Supply Mfg. Co., Inc., Linden, N. J.
Winkler—Burners, furnaces, boilers, heaters, stokers. Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind.
Winter-Chaser—Unitary air conditioners, furnaces, heaters. Campbell Heating Co., Des Moines, Ia.
Witch—Bolts, clamps, hangers, inserts, protectors. Carpenter & Paterson, Inc., Cambridge, Mass.
Wizard—Indicator-controllers. Fisher Governor Co., Marshalltown, Ia.
Wolf-Linde—Condensers, compressors, fittings, flanges, strainers, valves. Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Wondaire—Heaters, burners, furnaces. Cox Mfg. Co., Ridgeville, Ind.
Wonder—Pipe benders. American Pipe Bending Machine Co., Inc., Poultney, Vt.
Wondercote Alkyd—Enamels and lacquers. Sonneborn Chemical & Refining Corp., Building Products Div., New York, N. Y.
Wurtzilite—Coatings. Ohmlac Paint & Refining Co., Inc., Long Island City, N. Y.

X-L—Gaskets, packing. Excelsior Leather Washer Mfg. Co., Rockford, Ill.
XX—Sheet metal punches. Duro-Dyne Corp., Long Island, N. Y.
Xit—Ventilators. Iona Ventilator Co., Inc., Philadelphia, Pa.
Xyron—Electrodes. Eutectic Welding Alloys Corp., Flushing, N. Y.

YC—Unitary air conditioners. Young Radiator Co., Racine, Wis.
Yager's—Solder. Benson Co., Inc., Alex R., New Hartford, N. Y.
Yarway Fine Screen—Strainers. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Gun-Pakt—Expansion pipe joints. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Hi-Lo—Alarms. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Hi-Lo-Graph—Recorders. Yarnall-Waring Co., Philadelphia, Pa.

Yarway Impulse—Steam traps. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Involute—Spray nozzles. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Remote—Indicators. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Seatless—Valves. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Unit-Tandem—Valves. Yarnall-Waring Co., Philadelphia, Pa.
Yarway Welbond—Valves. Yarnall-Waring Co., Philadelphia, Pa.
Yoloy—Pipe, sheet, tubing. Youngstown Sheet & Tube Co., Youngstown, O.

Zaponite—Enamels and lacquers. Glidden Co., Midwest Industrial Div., Chicago, Ill.
Zatex—Enamels and lacquers. Glidden Co., Midwest Industrial Div., Chicago, Ill.
Z Crete b-t-u—Insulating concrete, underground piping conduit, underground pipe insulation. Concrete Thermal Casings, Seattle, Wash.
Zebogene—Treatment. Berna Corp., Garwood, N. J.
Zebra—Insulation. Keasbey & Mattison Co., Ambler, Pa.
Zephyrcon—Condensers. Larkin Coils, Inc., Atlanta, Ga.
Zero—Cement, refractories. Standard Fuel Engineering Co., Detroit, Mich.
Zer-O-Disc—Finned surface. Vilter Mfg. Co., The, Milwaukee, Wis.
Zerofrost—Systems. McQuay, Inc., Minneapolis, Minn.
Zerolite—Pipe insulation. Johns-Manville, Corp., New York, N. Y.
Zeropaks— Coolers. McQuay, Inc., Minneapolis, Minn.
Zig Zag—Heat exchangers. Stout & Sons, David, St. Louis, Mo.
Zinaloy—Zinc sheets. Matthiessen & Hegeler Zinc Co., La Salle, Ill.
ZINCGRIP—Sheets. Armco Steel Corp., Middletown, O.
Zincilate—Coatings. Industrial Metal Protectives, Inc., Dayton, O.
Zincoater—Coatings. Tropical Paint Co., Cleveland, O.
Zinc Soot—Soot destroyers. Tamms Industries Co., Chicago, Ill.
Zinkote—Protective coatings for metals. Amercoat Corp., South Gate, Calif.
Zipcote—Protective coatings. Adhesive Products Corp., New York, N. Y.
Zip Dyeline Inspector—Piping leak detectors. **Zaco Laboratories, Cleveland, O.**
Zip-On—Plastic tubing. Devices, Inc., A Div. of Miracle Adhesives Corp., Bellmore, N. Y.
Zipper—Welders. Mid-States Welder Mfg. Co., Chicago, Ill.
Zip-Portable—Welders. Mid-States Welder Mfg. Co., Chicago, Ill.
Zip Speed Lacquer—Identification markers. Zaco Laboratories, Cleveland, O.
Zircon—Furnace and refractory cement, refractories. Taylor Sons Co., Charles, Cincinnati, O.
Zone-A-Flow—Heating systems, valves. White-Rodgers Co., St. Louis, Mo.
Zone-A-Loop—Valves, heating systems. White-Rodgers Co., St. Louis, Mo.
Zone-A-Matic—Boilers, systems, valves. Edwards Engineering Corp., Pompton Plains, N. J.
Zoneline—Unitary air conditioners. General Electric Co., Room Air Conditioner Dept., Major Appliance Div., Louisville, Ky.
Zone-Pac—Heating systems. Barber-Colman Co., Rockford, Ill.
Zonetrol—Systems. Acro Div., Robertshaw-Fulton Controls Co., Columbus, O.
Zytel—Plastics, powder and resins. duPont de Nemours & Co., Inc., E. I., Polychemicals Dept., Wilmington, Del.

DIRECTORY SECTION

HEATING, PIPING, AND AIR CONDITIONING EQUIPMENT FOR INDUSTRIAL AND ALL OTHER LARGE BUILDINGS

PART 4 — ALL MANUFACTURERS' ADDRESSES

A

A. & A. Register Co., 8327 Clinton Rd., Cleveland 9, O.
ACEC Electric Corp., 40 E. 49th St., New York 17, N. Y.
A.C.M.I. Borescope Div., American Cystoscope Makers, Inc., 8 Pelham Parkway, Pelham Manor, N. Y.
A-J Mfg. Co., 3601 E. 18th St., Kansas City 27, Mo.
A.R.A. Mfg. Co., P. O. Box 685, Grand Prairie, Tex.
Abart Gear & Machine Co., 4828-36 W. 16th St., Chicago 50, Ill.
Abbeon Supply Co., 179-15 Jamaica Ave., Jamaica 32, N. Y.
Abbott & Biddle Co., 2413 Federal St., Philadelphia 46, Pa.
Abbott Products, Inc., 150-50 Twelfth Ave., Whitestone 57, N. Y.
Able Metal Spinning & Stamping Co., 2009 Nameoke Ave., Far Rockaway 91, N. Y.
Accurate Sheet Metal & Mfg. Works, Inc., 2336-44 Milwaukee Ave., Chicago 47, Ill.
Accurate Specialties Co., Inc., 37-11 57th St., Woodside 77, N. Y.
Ace Engineering Co., 2850 W. Harrison, Chicago 12, Ill.
Ace-Sycamore, Inc., 448 DeKalb Ave., Sycamore, Ill.
Acer & Whedon, Inc., Medina, N. Y.
Acheson Mfg. Co., Braddock P. O., Rankin, Pa.
Aeker Corp., P. O. Box 1310, Meridian, Miss.
Ackerman Gas Boiler Corp., S. Main St., & P. R.R., McDonald, Pa.
Acme Asbestos Covering & Flooring Co., 141 W. Jackson Blvd., Chicago 4, Ill.
Acme Chemical Co., 2506 N. 32nd, Milwaukee 45, Wis.
Acme Electric Corp., Cuba, N. Y.
Acme Electric Heating Corp., 99 Reading St., Rosbury 19, Mass.
Acme Electric Welder Co., 2618 Fruitland Ave., Los Angeles 58, Calif.
Acme Engineering & Mfg. Corp., Box 1203, Muskogee, Okla.
Acme-Fisher Div., Broadway Rubber Corp., 529 E. Broadway, Louisville.
Acme Gauge & Instrument Co., Inc., 30 Main St., Brooklyn, N. Y.
Acme-Hamilton Mfg. Corp., Meade St., Trenton 3, N. J.
Acme Industries, Inc., 600 N. Mechanic St., Jackson, Mich.
Acme Mfg. Co., 7500 State Rd., Philadelphia 36, Pa.
Acme Newport Steel Co., Ninth & Lowell Sts., Newport, Ky.
Acme Steel Co., 135th St. & Perry Ave., Chicago 27, Ill.
Acme Welding Div. of the United Tool & Die Co., 1031 New Britain Ave., West Hartford, Conn.
Acorn Refining Co., 8001 Franklin Ave., Cleveland 2, O.
Acro Div., Robertshaw-Fulton Controls Co., 2040 E. Main St., Columbus, O.
Acromark Co., 531 Morrell St., Elizabeth, N. J.
Acro Welder Mfg. Co., 1719 W. St. Paul Ave., Milwaukee 3, Wis.
Adam Electric Co., Frank, 3648 Windsor Pl., St. Louis 13, Mo.
Adams Chemical Corp., 120 Center St., El Segundo, Calif.
Adams Co., The, E. 4th St., P. O. Box 268, Dubuque, Ia.
Adams Co., Inc., R. P., 468 Park Dr., Buffalo 17, N. Y.
Adams Mfg. Co., 1530 St. Clair Ave., Cleveland 14, O.
Adams Pipe Repair Products, 2453 Merced Ave., P. O. Box 3367, So. El Monte, Calif.
Addison Products Co., Addison, Mich.
Adelta Mfg. Co., Inc., 21 & Ellsworth, Philadelphia 46, Pa.
Adhesive Products Corp., 1660 Boone Ave., New York 60, N. Y.
Adhesive Tape Corp., 58 Seabring St., Brooklyn 31, N. Y.
Adjustable Clamp Co., 417 N. Ashland Ave., Chicago 22, Ill.
Admiral Corp., 3800 Cortland St., Chicago 47, Ill.
Adre Co., The, 2402 N. 82nd St., Milwaukee, Wis.
Adsco Div., Yuba Consolidated Industries, Inc., Honesdale, Pa.
Advance Furnace Co., 2300 E. Douglas, Wichita 7, Kans.
Advance Pump Co., 1201-5th St., Berkeley 10, Calif.
Advance Relays, Product of Electronics Div., Elgin National Watch Co., 2435 N. Naomi St., Burbank, Calif.
Aemco Inc., 10 State St., Mankato, Minn.
Aerco Corp., Northvale, N. J.
Aerofin Corp., 101 Greenway Ave., Syracuse 3, N. Y.
Aeroil Products Company, Inc., 69 Wesley St., South Hackensack, N. J.
Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Santa Ana Freeway at Euclid Ave., Anaheim, Calif.
Aeroprojects, Inc., 310 E. Rosedale Ave., West Chester, Pa.
Aeroquip, Inc., 1225 W. Main St., Van Wert, O.
Aeroquip Corp., 300 S. East Ave., Jackson, Mich.
Aeroquip Corp., Marman Div., 11214 Exposition Blvd., Los Angeles 64, Calif.
Aerotec Corp., The, Greenwich, Conn.
Aerovent Fan Co., Inc., Ash and Barlow Sts., Piqua, O.
Aerovox Corp., New Bedford, Mass.
Aetna Ball & Roller Bearing Co., Div. Parkersburg-Aetna Corp., 4600 W. Schubert, Chicago, Ill.
Afco Fitting Co., Div. of Curtis Mfg. Co., 5300 Harvard Ave., Cleveland 5, O.
Aget Mfg. Co., 1320 E. Church St., Adrian, Mich.
Agnew & Tomlinson, 51-04 Vernon Blvd., Long Island City 1, N. Y.
Aimco Products Corp., Subsid. of Yuba Consolidated Industries, Inc., Box 9067, Tulsa, Okla.
Airaterra (Roylyn Products), 620 Paula Ave., Glendale 1, Calif.
Air Conditioning, Inc., 88 N. Highland Ave., Ossining, N. Y.
Air Conditioning Engineering Co., 44 First St., Cambridge 41, Mass.
Air Conditioning Equipment Corp., 219 E. 44th St., New York 17, N. Y.
Air Conditioning Products Co., 2340 W. Lafayette Blvd., Detroit 16.
Air-Con Filter Corp., 1127 S. 3rd St., Memphis 6, Tenn.
Air Control Products, Inc., Coopersville, Mich.
Air Controls, Inc., Div. of Cleveland Heater Co., 2310 Superior Ave., Cleveland 14, O.
Air-Cooling Engineering Co., P. O. Box 744, Evanston, Ill.
Aircraft Porous Media, Inc., 30 Sea Cliff Ave., Glen Cove, N. Y.
Air Devices, Inc., 185 Madison Ave., New York 16, N. Y.
Air Distribution Products Co., 8201 W. 3rd, Los Angeles 48, Calif.
Airdoor, Inc., Div. of New Castle Products, Inc., New Castle, Ind.
Aireactor Corp., 271 Madison Ave., New York 16, N. Y.
Aire-Foile Fan & Blower Co., 10047 West Fort, Detroit 9, Mich.
Airetool Mfg. Co., Springfield, O.
Air-Factors, Inc., 1630 Industrial Park St., Covina, Calif.
Airfan Engineering Co., 7401 Telegraph Rd., Los Angeles 22, Calif.
Air Filter Corp., 4554 West Woolworth Ave., Milwaukee 18, Wis.
Airfloor Co. of California, Inc., 13729 East Rosecrans Blvd., Santa Fe Springs, Calif.
Airflow Co., 400 S. Stonestreet Ave., Rockville, Md.
Air Flow Controls Co., 621 W. Lake St., Minneapolis 8, Minn.
Airgard Mfg. Co., 362 W. Erie St., Chicago 10, Ill.
Airguide Instrument Co., 2210 Wabansia Ave., Chicago 47, Ill.
AirGuide Plastics Corp., 20 S. E. 3rd Ave., Miami 32, Fla.
Air Heaters, Inc., 1004 Mahoning Bank Bldg., Youngstown, O.
Airjet Ventilator Co., 133 Industrias, San Clemente, Calif.
Airkem, Inc., 241 E. 44 St., New York 17, N. Y.
Air-Loc Div., Clark, Cutler, McDermott Co., Franklin, Mass.
Airmaster Corp., 1801 W. Belle Plaine Ave., Chicago, Ill.
Airmatic Valve, Inc., 7317 Associate Ave., Cleveland 9, O.
Air-Maze Corp., Subsidiary of Rockwell-Standard Corp., 25000 Miles Rd., Cleveland 28, O.
Air Motion Research Div., Missile Dynamics Corp., 10890 Stanford Ave., Lynwood, Calif.
Airolite Co., The, Marietta, O.
Air-O-Plastik Corp., 310 Seventeenth St., Union City, N. J.
Air Pollution Control Div., John Wood Co., Essex Bldg., Bernardsville, N.J.
Air Products, Inc., 949 Hamilton St., Allentown, Pa.
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., Socony-Mobil Bldg., 150 E. 42nd St., New York 17, N. Y.
Air & Refrigeration Corp., 439 Madison Ave., New York 22, N. Y.
Airserco Mfg. Co., 435 Melwood Ave., Pittsburgh 13, Pa.
Airson Co., Inc., 1109 N. 108th St., Milwaukee 13, Wis.
Airtex Corp., 2900 North Western Ave., Chicago 18, Ill.
Airtherm Mfg. Co., 711 S. Spring Ave., St. Louis 77, Mo.
Airtron Corp., Div. of the Higgins Metal Products Co., 2000 Broadway, Swanton, O.
Ajax Boiler & Heater Co., 1519 W. 132nd St., Gardena, Calif.
Ajax Flexible Coupling Co., Inc., Westfield, N. Y.
Akron Metallic Gasket Co., 155 N. Union, P. O. Box 911, Akron 9, O.
Alabama Pipe Co., Anniston, Ala.
Aladdin Heating Corp., 1111 Aladdin Ave., San Leandro, Calif.
Aladdin's Products, Inc., 50 W. Broad St., Columbus 15, O.
Alan Wood Steel Co., Conshohocken, Pa.
Alasco Rubber & Plastic Corp., 287 El Camino Real, San Bruno, Calif.
Albert Pipe Supply Co., Inc., 101 Varick Ave., Brooklyn 37, N. Y.
Albertson & Co., Inc., 2801-2999 Floyd Blvd., Sioux City 2, Ia.
Albion Div., McGraw-Edison Co., 704 N. Clark St., Albion, Mich.
Alco Products, Inc., Schenectady 5, N. Y.
Alco Valve Co., 865 Kingsland Ave., St. Louis 30, Mo.
Aldrich Co., 105 E. Williams St. Wyoming, Ill.
Aldrich Pump Co., 4 Pine St., Allentown, Pa.
Align-O Pipe Guide Co., P. O. Box 296, Upper Darby, Pa.
Allcraft Mfg. Co., Inc., 27 Hayward St., Cambridge 42, Mass.
Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22, Pa.
Allegheny Valve Co., 349 Pennsylvania Ave. W., Warren, Pa.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Allen Co., Inc., L. B., 9307 Berenice, Schiller Park, Ill.
Allen Co., Robert G., P. O. Box 110, Mechanicsville, N. Y.
Allen Cooler & Ventilator, Inc., 704 Woodward, Rochester, Mich.
Allen Mfg. Co., W. D., 650 South 25th Ave., Bellwood, Ill.
Allen-Sherman-Hoff Co., The, 259 E. Lancaster Ave., Wynnewood, Pa.
Alliance Mfg. Co., Inc., Alliance, O.
Allied Chemical Corp., Plastics Div., 40 Rector St., New York, N. Y.
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.
Allied Industries, Inc., 701 W. Johnson St., Upper Sandusky, O.
Allied Metal Hose Co., 3745 Ninth St., Long Island City 1, N. Y.
Allied Piping Products Co., Inc., Fittings Div., P. O. Box 311, Salem, O.
Allied Porcenell, Inc., 6641 S. Narragansett Ave., Chicago 38, Ill.
Allied Precision Industries, Inc., 414 Stevens St., Geneva, Ill.

Allied Weld-Craft, Inc., 401 W. South St., Indianapolis 25, Ind.
Allin Mfg. Co., 410 N. Hermitage Ave. Chicago, Ill.
Allington & Curtis Mfg. Co., 945 So. Towerline, Saginaw, Mich.
Allis-Chalmers Mfg. Co., 1171 S. 70th St., Milwaukee 1, Wis.
Allis Co., Louis, The, 427 E. Stewart St., Milwaukee 1, Wis.
Allison-Campbell Div. of American Chain & Cable Co., Inc., 929 Connecticut Ave., Bridgeport 2, Conn.
Allmetal Screw Products Co., Inc., 821 Stewart Ave., Garden City, Long Island, N. Y.
Alloy Propeller, Zelienople, Pa.
Alloy Rods Co., Lincoln Highway West, York, Pa.
Alloy Specialties Co., Swissvale, Pittsburgh 18, Pa.
Alloy Stainless Products Co., 607 Union Blvd., Totowa, N. J.
Alloy Steel Products Co., 1322 W. Elizabeth Ave., Linden, N. J.
Allpax Co., Inc., Mamaroneck, N. Y.
All-State Welding Alloys Co., Inc., White Plains, N. Y.
Almar Hydraulic Valve Co., 10011 Meech Ave., Cleveland 5, O.
Almasol Corp., The, A Div. of Lubrication Engineers, Inc., 316 N. Sylvania, P. O. Box 7167, Ft. Worth 11, Tex.
Alnor Instrument Co., Div. of Illinois Testing Laboratories, Inc., 420 N. LaSalle St., Chicago 10, Ill.
Alpha Metals, Inc., 60 U Water St., Jersey City 4, N. J.
Alpha Plastics, Inc., 78 Okner Pkwy., Livingston, N.J.
Alphil Spot Welder Mfg. Corp., 1058 Pacific St., Brooklyn, N. Y.
Alstrom Corp., The, 790 E. 176 St., New York 60, N. Y.
Alter Co., Harry, 1717 S. Wabash Ave., Chicago, Ill.
Alton Mfg. Co., 1112 Ross Ave., Dallas 2, Tex.
Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.
Aluminum Products, Inc., Fort Lauderdale, Fla.
Alumiseal Corp., 429 E. 53rd St., New York 22, N. Y.
Amana Refrigeration, Inc., Amana, Ia.
Amchem Products, Inc., Brookside Ave., Ambler, Pa.
Amco Plastic Pipe Co., 2002 Davis St., San Leandro, Calif.
Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
Ameresco Inc., 7 Center Ave., Little Falls, N. J.
American Agile Corp., P. O. Box 168, Bedford, O.
American Air Curtain Corp., 472 Paul Ave., St. Louis 35, Mo.
American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.
American Boa, Inc., 114 Liberty St., New York, N. Y.
American Blow Pipe Co., 3549 W. Cermak Rd., Chicago 23, Ill.
American Car & Foundry Div. of ACF Industries, Inc., 750 Third Ave., New York 17, N. Y.
American Cast Iron Pipe Co., 2930 N. 16th St., Birmingham 7, Ala.
American Coal Burner and Wood Stoker Corp., 1133 W. Cornelia Ave., Chicago 13, Ill.
American Comfort Mfg. Co., 2401 Main St., Evanston, Ill.
American Coolair Corp., 3604 Mayflower St., P. O. Box 2300, Jacksonville 3, Fla.
American Cooling Tower Co., 2710 McGee St., Kansas City 8, Mo.
American District Telegraph Co., 155 Sixth Ave., New York, N. Y.
American Engineering Co., 3915 Main St., Kansas City 11, Mo.
American Engineering Co., Div. of United Industrial Corp., Wheatsheaf Lane & Sepviva St., Philadelphia 37, Pa.
American Felt Co., Glenville, Conn.
American Flange & Mfg. Co., Inc., 30 Rockefeller Plaza, New York 20.
American Flow Control Corp., 2220 South Blvd., Houston, Tex.
American Foundry & Furnace Co., Washington St. at McClun, Bloomington, Ill.
American Furnace Co., 1300 Hampton Ave., St. Louis 10, Mo.
American Gas & Chemicals, Inc., Leak-Tec Div., 120 East End Ave., New York 28, N. Y.
American Gauge & Mfg. Co., 125 Bayard St., Dayton 1, O.
American Gilsonite Co., Municipal Airport P. O. Box 15, Salt Lake City, Utah.
American Hair & Felt Co., Room 322, Merchandise Mart, Chicago 54, Ill.
American Hard Rubber Co., Div. of Amerace Corp., Ace Rd., Butler, N. J.
American Hydrotherm Corp., 10-55 Jackson Ave., Long Island City 1.
American Hydrovac, Div. Pitz Foundry Inc., 290 Scholes St., Brooklyn 6, N. Y.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
American K. A. T. Corp., Subsidiary of Magnus Chemical Co., Inc., Garwood, N. J.
American Ladder & Scaffold Co., Inc., 5505 N. W. 7th Ave., Miami 38, Fla.
American Machine Products Co., 208½ S. 2nd Ave., Marshalltown, Ia.
American Machine Wks., Inc., 1320 Clark St., Racine, Wis.
American Manganese Bronze Co., Rhawn & Hegerman Sts., Philadelphia, Pa.
American-Marsh Pumps, Inc., 60 Capital Ave., N. E., Battle Creek, Mich.
American Metal Works, Inc., P. O. Box 7027, New Orleans, La.
American Meter Co., Inc., 13500 Philmont Ave., Philadelphia 16, Pa.
American Meter Co., Pump Div., 13500 Philmont Ave., Philadelphia 16, Pa.
American Moistening Co., Cleveland, N. C.
American Photocopy Equipment Co., 1920 W. Peterson Ave., Chicago 26, Ill.
American Pipe Bending Machine Co., Inc., 17 Furnace St., Poultney, Vt.
American Pipe Tool Co., 4856 W. Kinzie St., Chicago 44, Ill.
American Platinum & Silver Div., Engelhard Industries, Inc., 231 New Jersey Railroad Ave., Newark, N. J.
American Potash & Chemical Corp., Refrigeration Dept., 3000 W. 6th St., Los Angeles, Calif.
American Pulley Co., The, Div. Van Norman Industries, Inc., 4200 Wissahickon Ave., Philadelphia 29.
American Sand-Banum Co., Inc., 1 N. Merrick Ave., Merrick, N. Y.
American Sanitary Mfg. Co., 308 Latimer St., Abingdon, Ill.
American Screw Co., Willimantic, Conn.
American Sealants Co., 705 N. Mountain Rd., Hartford 11, Conn.
American Silver Co., 36-07 Prince St., Flushing 54, N. Y.
American Sisalkraft Corp., 55 Starkey Ave., Attleboro, Mass.
American Smelting & Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.
American Solder & Flux Co., 19th and Willard Sts., Philadelphia 40, Pa.
American-Standard Air Conditioning Div., 40 W. 40th St., New York.
American-Standard Controls Div., 5900 Trumbull Ave., Detroit 8, Mich.
American-Standard Industrial Div., Detroit 32, Mich.
American-Standard Plumbing & Heating Div., 40 West 40th St., New York 18, N. Y.
American Steel & Wire Div., United States Steel Corp., Rockefeller Bldg., Cleveland 13, O.
American Time Products, Inc., 61-20 Woodside Ave., Woodside 77, N. Y.
American Tube & Controls, Inc., 100 Pulaski St., West Warwick, R. I.
American Viscose Corp., 350 5th Ave., New York, N. Y.
American Vitrified Products Co., 700 National City Bank Bldg., Cleveland 10, O.
American Vulcathene Div. Nalge Co., Inc., 75 Panorama Creek Dr., Rochester 2, N. Y.
American Warming & Ventilating Co., 1017-1021 Summit St., Toledo 4, O.
American Water Softener Co., Lehigh Ave. and 4th St., Philadelphia 33, Pa.
American Wells Wks., 100 N. Broadway, Aurora, Ill.
American Zinc Products Div., Ball Brothers Co., Greencastle, Ind.
Ames Iron Works, Inc., Oswego, N. Y.
Aminco Refrigeration Products, American Injector Co., 1000 E. McNichols, Detroit 3, Mich.
Ammco Tools, Inc., 2100 Commonwealth Ave., North Chicago, Ill.
Ammerman Co., Inc., S. Greeley St., Stillwater, Minn.
Ammo Products, Inc., 909 Franklin St., N.E., Washington 17, D. C.
Ampco Metal, Inc., 1731 S. 38th St., Milwaukee 46, Wis.
Ampere Industries, 60 Boston St., Newark 3, N. J.
Ampion Corp., 4-88 47th Ave., Long Island City 1, N. Y.
Anaconda Aluminum Co., P. O. Box 1654, Louisville 1, Ky.
Anaconda American Brass Co., 414 Meadow St., Waterbury 20, Conn.
Anaconda Metal Hose Div., Anaconda American Brass Co., The, 698 South Main St., P. O. Box 791, Waterbury 20, Conn.
Analytical Measurements, Inc., 585 Main St., Chatham, N. J.
Anchor Coupling Co., Inc., 342 N. 4th., Libertyville, Ill.
Anchor Div., Stratton & Terstegge Co., Inc., P. O. Box 311, New Albany, Ind.
Anchor Metal Co., Inc., 966 Meeker Ave., Brooklyn, N. Y.
Anchor Packing Co., 401 N. Broad St., Philadelphia 8, Pa.
Andale Co., 1740 Cherry St., Philadelphia 3, Pa.
Andersen Corp., Bayport, Minn.
Anderson Co., V. D., The, Div. of International Basic Economy Corp., 1949 W. 96th St., Cleveland 2, O.
Anderson Brass Co., 100 S. Campbell, Detroit 9, Mich.
Anderson Chemical Co., Inc., 1620 Waterville Rd., Macon, Ga.
Anderson Deisel Engine Co., 6245 State Rd., Philadelphia 35, Pa.
Anderson & Grunsky, P. O. Box 455, Santa Cruz, Calif.
Anderson Metals Corp., Twenty-Second & Harrison Sts., Kansas City 8, Mo.
Anderson-Prichard Oil Corp., Liberty Bank Bldg., Oklahoma City 2.
Anderson Products, Inc., 34 Crafts St., Newtonville 60, Mass.
Anderson-Snow Corp., 3863 N. Milwaukee Ave., Chicago 41, Ill.
Anderson-Stolz Corp., 1731 Walnut St., Kansas City 8, Mo.
Andrew Parts Mfg. Co., 32-70 31st St., Long Island City 6, N. Y.
Andrew Technical Supply Co., 7068 N. Clark St., Chicago, Ill.
Anemostat Corp. of America, 10 E. 39th St., New York 16, N. Y.
Anesite Co., 3575 Touhy Ave., Lincolnwood, Chicago 45, Ill.
Angier Adhesives, Div. of Interchemical Corp., 120 Potter St., Cambridge, Mass.
Anodyne, Inc., Div. North Shore Nameplate, 1270 N.W. 165th St., N. Miami Beach 69, Fla.
Ansul Chemical Co., Refrigeration Div., Marinette, Wis.
Anthony Co., End of Baker, Streator, Ill.
Anti-Corrosive Metal Products Co., Inc., Castleton-On-Hudson, N. Y.
Anti-Friction Bearings Co., 6433 Foster Bridge Rd., Bell Gardens, Calif.
Apex Reinforced Plastics, Washington & Elm Sts., Cleveland 13, O.
Apextro Products Co., Div. of Apex Sheet Metal Works, Inc., 1821 N. Eastlake Ave., Los Angeles 31, Calif.
Appliance Building Co., Inc., 1120 W. Idaho St., Seattle 6, Wash.
Applied Mechanics Co., 381 Congress St., Boston 10, Mass.
April Showers Div., Swartwout Fabricators, Inc., Kokomo, Ind.
Aqua Electric Scale Control, Inc., 2026 E. 22nd St., Cleveland 15, O.
Aqua Matic, Inc., 2412 Grant Ave., Rockford, Ill.
Aquatrol Ferr-X Corp., Clifton, N. J.
Arabol Mfg. Co., 110 E. 42nd St., New York 17, N. Y.
Arbest Mfg. Co., 3047 Amber St., Philadelphia 34, Pa.
Arco Co., The, 7301 Bessemer Ave., Cleveland 27, O.
Arco Mfg. Co., 542 West 55th St., New York 19, N. Y.
Arco Products, Automotive Rubber Co., 12550 Beech Rd., Detroit, Mich.
Arcos Corp., 1500 S. 50th St., Philadelphia 43, Pa.
Arens Controls, Inc., 2017 Greenleaf St., Evanston, Ill.
Arex Co., 612 N. Michigan Ave., Chicago 11, Ill.
Argo Industries, Inc., 524 Wethersfield Ave., Hartford, Conn.
Argo Plastic Products, 1400 West Tenth St., Cleveland 13, O.
Arjac Products Inc., 55-59 Halstead St., Rochester 10, N. Y.
Arkla Air Conditioning Corp., Shannon Bldg., 812 Main, Little Rock, Ark.
Arkos Mfg. Co., 7310 Woodward Ave., Detroit 2, Mich.
Armco Drainage & Metal Products, Inc., Welded Pipe Sales Div., Middletown, O.
Armco Steel Corp., 703 Curtis St., Middletown, Ohio.
Armite Laboratories, 6609 Broad St., Los Angeles 1, Calif.

Armour Industrial Chemical Co., Div. of Armour & Co., 110 N. Wacker Dr., Chicago 6, Ill.
Armour Industries, Alliance, O.
Armstrong-Bridgeport Tool Mfg. Corp., 357-363 Cortlandt St., Belleville, N. J.
Armstrong Bros. Tool Co., 5200-5300 W. Armstrong Ave., Chicago 46, Ill.
Armstrong Co., C. E., Gladstone, Ore.
Armstrong Co., Richard M., Box 566, West Chester, Pa.
Armstrong Contracting & Supply Corp., 2100 W. Fullerton Ave., Chicago 47, Ill.
Armstrong Cork Co., West Liberty St., Lancaster, Pa.
Armstrong Fittings Co., P. O. Box 1356, Des Moines, Ia.
Armstrong Furnace Co., Div. of National Union Electric Corp., 851 W. 3rd Ave., Columbus, O.
Armstrong Machine Wks., 874 Maple St., Three Rivers, Mich.
Arno Adhesive Tapes, Inc., 4100 Ohio St., Michigan City, Ind.
Aronson Machine Co., P. O. Box 307, Arcade, N. Y.
Arro Expansion Bolt Co., P. O. Box 388, Dept. M, Marion, O.
Arrow-Hart & Hegeman Elec. Co., 103 Hawthorne St., Hartford 6, Conn.
Arrowhead Products, Div. of Federal-Mogul-Bower Bearings, Inc., 2300 Curry St., Long Beach, Calif.
Arvin Industries, Inc., Columbus, Ind.
Ascot Gas Water Heaters, Inc., 222 W. Pittsburgh Ave., Milwaukee 4, Wis.
Ashburn Supply Co., 8468 Warner Dr., Culver City, Calif.
Ashcraft Co., J. P., 5643 Dyer St.. Dallas 6, Tex.
Assembly Products, Inc., 75 Wilson Mills Rd., Chesterland, O.
Associated Laboratories, Inc., 26845 Southfield, Lathrup Village, Mich.
Associated Valve Co., 337 W. Walnut St., North Wales, Pa.
Aston Products, Inc., 22804 Dequindre, Warren, Mich.
Atcor, Inc., 24422 Ryan Rd., Warren, Mich.
Atkins Saw Div., Borg-Warner Corp., Greenville, Miss.
Atkins Technical, Inc., 1276 W. Third St., Cleveland 13, O.
Atkomatic Valve Co., Inc., 545 W. Abbott St., Indianapolis 25, Ind.
Atlantic Engravers, Coldbrook Rd., Wilmington, Vt.
Atlantic Metal Hose Co., Inc., 308 Dyckman St., New York 34, N. Y.
Atlantic Pipe Bending & Fabricating Corp., Anderson Ave., Moonachie, N. J.
Atlantic Steel Boiler Co., S. E. Cor. 22nd & Washington Ave., Philadelphia 46, Pa.
Atlantic Steel Co., P. O. Box 1714, Atlanta 1, Ga.
Atlantic Ultraviolet Co., Inc., 24-10 40th Ave., Long Island City, N. Y.
Atlas Copco Eastern, Inc., 610 Industrial Ave., Paramus, N. J.
Atlas Industrial Corp., 849 39th St., Brooklyn 32, N. Y.
Atlas Mfg. Co., Eustis at Robbins St., St. Paul 14, Minn.
Atlas Mineral Products Co., 181 Walnut St., Mertztown, Pa.
Atlas Valve Co., 282 South St.. Newark, N. J.
Atlas Welding Accessories, Inc., 707 E. Lewiston Ave., Ferndale 20, Mich.
Auburn Burner Co., Lock Box 269, Auburn, Ind.
Auburn Burner Co., Edgerton, O.
Auburn Foundry Inc., Heating Div., Auburn, Ind.
Auburn Machine Works, Inc., Auburn, Neb.
Auburn SparkPlug Co., Inc., Auburn, N. Y.
Auer Register Co., 6600 Clement Ave., Cleveland 5, O.
Aurora Pump Div., The New York Air Brake Co., 619 Loucks St., **Aurora, Ill.**
Austin Engineering & Mfg. Co., Inc., 8935 Roseway Dr., Ysleta (El Paso County), Texas
Austin Mfg. Corp., 305 Perry Brooks Bldg., Austin 1, Tex.
Au-Temp-Co Corp., 657 Broadway, New York 12, N. Y.
Auto-Control Laboratories, Inc., 5251 W. Imperial Highway, Los Angeles 45, Calif.
Autoclave Engineers Sales Corp., 2930 W. 22nd St., Erie, Pa.
Automatic Burner Corp., 1823 W. Carroll Ave., Chicago 12, Ill.
Automatic Control Co., 995 University Ave., St. Paul 4, Minn.
Automatic Devices, Div. of American Machine & Metals, Inc., Sellersville, Pa.
Automatic Motor Base Co., Windsor, N. J.
Automatic Sprinkler Corp. of America, Auto-Grip Div., Youngstown 1, O.
Automatic Switch Co., Florham Park, N. J.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Automation Products, Inc., 3030 Max Roy, Houston 24, Tex.
Automotive Rubber Co., Inc., 12550 Beech Rd., Detroit 39, Mich.
Autostributor Co., 226 Leslie St., Lansing 12, Mich.
Avon Tube Div., Higbie Mfg. Co., Ewing Rd., Rochester, Mich.
Axeman-Anderson Co., 233 West St., Williamsport 3, Pa.

B

B-G Engineering Co., 5321 Long St., Houston. Tex.
Babbitt Chemical Co., 36 Prospect St., New Bedford, Mass.
Babbitt Steam Specialty Co., 1 Babbitt Sq., New Bedford, Mass.
Babcock & Wilcox Co., The, Boiler Div., Van Buren Ave., Barberton, O.
Babcock & Wilcox Co., The, Tubular Products Div., Beaver Falls, Pa.
Bacharach Industrial Instrument Co., 200 North Braddock Ave., Pittsburgh 8.
Badger Fire Extinguisher Co., Chase St., Methuen, Mass.
Badger Mfg. Co., 230 Bent St., Cambridge 41, Mass.
Badger Sales Co., Inc., 2251 W. Pico Blvd., Los Angeles 6, Calif.
Badham Insulation Co., Inc., 1909 — 1st Ave., S., Birmingham, Ala.
Bahnson Co., 1001 S. Marshall St., Winston-Salem 1, N. C.
Bailey Co., Chas. M., 667 Folsom St., San Francisco 7, Calif.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, O.
Baker Co., Inc., The, 106 Granite St., Biddeford, Me.
Baker, Inc., C. I., 1205 Colorado Ave., Lorain, O.
Baker & Co., R. H., 2244 East 37 St., Los Angeles 58, Calif.
Bal-Air, Inc., 1210 McGavock St., Nashville, Tenn.
Baldor Electric Co., 4353 Duncan Ave., St. Louis 10, Mo.
Baldwin-Ehret-Hill, Inc., 500 Breunig Ave., Trenton 2, N. J.
Baldwin Ward Mfg. Co., 1630 S. Main, Ottawa, Ks.
Balteau Electric Corp., New & Meadow Sts., Stamford, Conn.
Baltimore Aircoil Co., Inc., P. O. Box 7322, Baltimore 27, Md.
Band-It Co., 4799 Dahlia, Denver 16, Colo.
Banister Co., Inc., 23 Charles St., Cambridge 41, Mass.
Barber-Colman Co., 1701 Rock St., Rockford, Ill.
Barber Mfg. Co., 1058 E. 134th St., Cleveland 10, O.
Bar-Brook Mfg. Co., Inc., 6133 Linwood Ave., Shreveport, La.
Barclay, Inc., Robert, 1234 W. Fulton St., Chicago 7, Ill.
Barco Mfg. Co., 500 Hough St., Barrington, Ill.
Bard Mfg. Co., Bryan, O.
Barkow Mfg. Co., Inc., Aug. G., 2230 South 43rd St., Milwaukee 40, Wis.
Barksdale Valves, 5125 Alcoa Ave., Los Angeles 58, Calif.
Barnebey-Cheney Co., Cassady at East 8th Ave., Columbus 19, O.
Barnes & Jones, Inc., 34 Crafts St., Newtonville, Mass.
Barnes Manufacturing Co., Mansfield, O.
Barnes Tool Co., The, 31 Fletcher Ave., Lexington 73, Mass.
Barnstead Still & Sterilizer Co., Lanesville Terrace, Boston 31, Mass.
Barreled Sunlight Paint Co., 43 Dudley St., Providence 1, R. I.
Barrett Div., Allied Chemical Corp., 40 Rector St., New York 6, N. Y.
Barrett Haentjens & Co., Hazleton, Pa.
Barry Blower Co., 3100 California St., N.E., Minneapolis, Minn.
Barry Controls, Div. of Barry Wright Corp., 765 Pleasant St., Watertown 72, Mass.
Bart Mfg. Corp., 227 Main St., Belleville 9, N. J.
Barth Engineering & Mfg. Co., Inc., Milldale, Conn.
Bartlett Mfg. Co., 3003 E. Grand Blvd., Detroit 2, Mich.
Barton Instrument Corp., 580 Monterey Pass Rd., Monterey Park, Calif.
Barwick Mfg. Corp., 317 E. 18th, Wichita, Kan.
Barworth, Inc., 681 Morris Turnpike, Springfield, N. J.
Baseline Mfg. Corp. of Fla., P. O. Box 10666, St. Petersburg 33, Fla.
Basford Co., H. R., 235 15th St., San Francisco, Calif.
Basic Engineers, Inc., 1007 Main St., Sharpsburg 15, Pa.
Basic Inc., 845 Hanna Bldg., Cleveland 15, O.
Baso Inc., P. O. Box 461, Milwaukee, Wis.
Bastian-Morley Co., Inc., LaPorte, Ind.
Bate Soot Blower Div., General Blower Co., Inc., 6412 Girard Ave., Philadelphia 31, Pa.
Bath Co., Cyril, The, 32400 Aurora Rd., Solon, O.
Bausch & Lomb Optical Co., 63360 Bausch St., Rochester 2, N. Y.
Bayer Co., 4030 Chouteau Ave., St. Louis 10, Mo.
Bayley Blower Co., A Div. of the Green Fuel Economizer Co., Inc., 6600 W. Burnham St., Milwaukee 14, Wis.
Beach-Russ Co., 420 Lexington St., New York 17, N. Y.
Beacon Brass Co., 2 Jackson, Waltham, Mass.
Beacon-Morris Corp., 60 Brainerd Rd., Allston, Boston 34, Mass.
Beaird Co., J. B., 6200 St. Vincent Ave., Shreveport, La.
Bear Mfg. Co., Industrial Div., 2030 5th Ave., Rock Island, Ill.
Bearing Co. of America, Div. of Federal-Mogul-Bower Bearings, Inc., 501 Harrisburg Ave., Lancaster, Pa.
Beaton & Cadwell Mfg. Co., 185 Main St., New Britain, Conn.
Beaton & Corbin Mfg. Co., Southington, Conn.
Beaver Advance Corp., Ellwood City, Pa.
Beaver Pipe Tools, Inc., 310 Dana Ave., Warren, O.
Beckett & Co., Inc., Thomas, 2521 Willowbrook Rd., P. O. Box 13,245, Dallas 20, Tex.
Beckett Corp., R. W., Elyria, O.
Beckley Perforating Co., 301 North Ave., Garwood, N. J.
Beckman & Whitley, Inc., 973 San Carlos Ave., San Carlos, Calif.
Belco Industrial Equipment Div., Bogue Electric Mfg. Co., 100 Pennsyl**vania Ave., Paterson 3, N. J.**
Belco Industries, Inc., 316 South 16th St., St. Louis 3, Mo.
Bell & Gossett Co., 8200 N. Austin Ave., Morton Grove, Ill.
Bell Machine Specialties, 4813 Tremont Ave., Trevose, Pa.
Bellows-Valvair, Div. of IBEC, 454 Morgan Ave., Akron 11, O.
Belmont Packing & Rubber Co., The, Butler & Sepviva Sts., Philadelphia 37, Pa.
Belmont Smelting & Refining Wks., Inc., 349 Belmont Ave., Brooklyn 7, N. Y.
Belt-Ice Corp., 3400 16th W., Seattle, Wash.
Beltran Associates, Inc., 1133 East 35th St., Brooklyn 10, N. Y.
Bemco, Inc., 11631 Vanowen St., North Hollywood, Calif.
Bemis Bro. Bag Co., 408 Pine St., Box 111, St. Louis 2, Mo.
Bendix Corp., The, Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, O.
Bendix Filter Div., Bendix Aviation Corp., 434 W. 12 Mile Rd., Madison Heights, Mich.
Bendix-Westinghouse Automotive Air Brake Co., 950 E. Virginia St., **Evansville, Ind.**
Benjamin Air Rifle Co., 1527 S. 8th St., St. Louis 4, Mo.
Benjamin Electric Mfg. Co., Des Plaines, Ill.
Benson Co., Inc., Alex. R., Middlesettlement Rd., New Hartford, N. Y.
Benson Mfg. Co., 1811 Agnes Ave., Kansas City, Mo.
Bergen Pipesupport Corp., 50 Church St., New York 7, N. Y.
Berger Bros. Co., 229-237 Arch St., Philadelphia 6, Pa.
Berkeley Pump Co., P. O. Box 7, Station A, Berkeley 2, Calif.
Berko Electric Mfg. Co., 182-20 Liberty Ave., Jamaica 12, N. Y.
Berlin Chapman Co., Berlin, Wis.
Berna Co., A. J., 15251 Twelve Mile Rd., Roseville, Mich.
Berna Corp., 27-02 43rd Ave., Long Island City 1, N. Y.
Bernard-Franklin Co., Inc., 3126 E. Hedley St., Philadelphia 37, Pa.
Bernstrom, Inc., C. R., 183 Hartford Ave., Providence, R. I.
Bernz Co., Otto, Driving Park & Ramona, Rochester 13, N. Y.
Berry-Hill Corp., Hill Diesel Engine Div., 1 Washington Ave., Providence, R. I.
Bertram Co., Harvey P., The, 2225 Bogen St., Cincinnati 22, O.
Bertsch & Co., Inc., Church St., Cambridge City, Ind.

Besser Furnace and Air Conditioning Corp., 754 Clement Ave., Charlotte, N. C.
Best Combustion Equipment Co., Inc., W. N., 85 Industrial Ave., Little Ferry, N. J.
Bestt Rollr Co., 160 S. Brooke St., Fond du Lac, Wis.
Bete Fog Nozzle Inc., 309 Wells St., Greenfield, Mass.
Bethlehem Foundry & Machine Co., Bethlehem, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Bettcher Mfg. Corp., 3106 W. 61st St., Cleveland 2, O.
Better Engineered Controls, 1822 S. Burlington Ave., Los Angeles 6, Calif.
Beverly Shear Mfg. Co., 3019 W. 111th St., Chicago 43, Ill.
Bica Co., 1170 N. State St., Girard, O.
Biersach & Niedermeyer Co., 1937 N. Hubbard St., Milwaukee 12.
B-I-F Industries, Builders-Providence Div., 381 Harris Ave., Providence 1, R. I.
B-I-F Industries, Omega Div., 381 Harris Ave., Providence 1, R. I.
B-I-F Industries, Proportioneers Div., 381 Harris Ave., Providence 1, R. I.
Bigelow Co., The, 174 River St., New Haven 3, Conn.
Bigelow Liptak Corp., 13300 Puritan Ave., Detroit 27, Mich.
Biggs Boiler Wks. Co., The, 1007 Bank St., E. Akron 5, O.
Bignall & Keeler Div., John Ramming Machine Co., 4591 McRee Ave., St. Louis 10, Mo.
Bil-Jax, Inc., Archbold, O.
Billings & Spencer Co., 1 Laurel St., Hartford 1, Conn.
Binkley Bolter Framing Sales Co., Wright City, Mo.
Binks Mfg. Co., 3114-40 Carroll Ave., Chicago 12, Ill.
Birchfield Boiler, Inc., 2503 E. 11th St., Tacoma 1, Wash.
Bird-Archer Co., 4337 North American St., Philadelphia 40, Pa.
Birks Mfg. Co., 811 Hanover Rd., Meriden, Conn.
Bishopric Products Co., 4413 Este Ave., Cincinnati 32, O.
Bituminous Coal Equipment, Inc., 2608 Madison Ave., Indianapolis 3, Ind.
Black & Decker Mfg. Co., The, 628 Pennsylvania Ave., Towson 4, Md.
Black Mfg. Co., The, Div. of Alexander Milburn, Inc., 403 Penn St., Baltimore 30, Md.
Black, Sivalls & Bryson, Inc., 7500 E. 12th St., Kansas City 26, Mo.
Black & White Chemical Co., 130 Walnut Ave., New York 54, N. Y.
Blackhawk Mfg. Co., 5325 W. Rogers St., Milwaukee 46, Wis.
Blackmer Pump Co., 1809 Century Ave., S. W., Grand Rapids 9, Mich.
Blaw Knox Co., Buflovak Equipment Div., 50 Winchester Ave., Buffalo 11, N. Y.
Blaw Knox Co., Power Piping Div., 829 Beaver Ave., Pittsburgh 33, Pa.
Blazer Corp., 173 Market St., Passaic, N. J.
Blissfield Mfg. Co., Route No. 3, Blissfield, Mich.
Blood Brothers Machine Div., Rockwell Spring and Axle Co., Allegan, Mich.
Blossom Mfg. Co., Inc., 2337 McDonald Ave., Brooklyn 23, N. Y.
Blower Application Co., 3361 N. 35th St., Milwaukee 16, Wis.
Blue Ridge Talc Co., Inc., Henry, Va.
Blue Seal Chemical Co., 177 Westfield Ave., W., Roselle Park, N. J.
Bluffton Electric Co., Bluffton, Ind.
Bock Corp., 110 S. Dickinson St., Madison, Wis.
Bodine Electric Co., 2500 W. Bradley Place, Chicago 18, Ill.
Bohn Aluminum & Brass Corp., 1400 Lafayette Bldg., Detroit, Mich.
Bohn Aluminum & Brass Corp., Danville Div., Danville, Ill.
Boiler Engineering & Supply Co., Manavon St., Phoenixville, Pa.
Boiler Equipment Trust, Amherst, Mass.
Bolind, Inc., Boulder 15, Colo.
Bolta Products, A Div. of General Tire & Rubber Co., Lawrence, Mass.
Bonney Forge & Tool Wks., Cedar & Meadow Sts., Allentown, Pa.
Borden Chemical Co., Div. of the Borden Co., Coatings & Adhesives Div., Lincoln Blvd., Middlesex, N. J.
Bordo Co., Inc., L. J., 106 N. Keswick Ave., Glenside, Pa.
Borg-Warner Mechanical Seals, Div. of Borg-Warner Corp., P. O. Box 2017A, Terminal Annex, Los Angeles 54, Calif.
Borm Mfg. Co., 23 N. Union St., Elgin Ill.
Bostik Adhesives, BB Chemical Co., Subsid. of United States Shoe Machinery Corp., 784 Memorial Dr., Cambridge 39, Mass.
Bostitch Inc., East Greenwich, R. I.
Boston Gear Works, Quincy 71, Mass.
Boston Machine Works Co., 7 Willow St., Lynn, Mass.
Boston Woven Hose & Rubber Co., Div. of American Biltrite Rubber Co., 29 Hampshire St., Cambridge, Mass.
Botfield Refractories Co., Swanson & Clymer Sts., Philadelphia 47, Pa.
Boulin Instrument Corp., 10 First St., Pelham, N. Y.
Bound Brook Oil-less Bearing Co., Bound Brook, N. J.
Bowen Engineering, Inc., North Branch, N. J.
Bowerston Shale Co., The, P.O. Box 2, Bowerston, O.
Bowman Steel Corp., P. O. Box 2129, Pittsburgh 30, Pa.
Boylston Steam Specialty Co., 116-122 W. Illinois St., Chicago, Ill.
Brabant Brass Mfg. Co., 8925 Knox Ave., Detroit 11, Mich.
Brabender Corp., Rochelle Park, N. J.
Bradshaw Steel & Forge Co., P. O. Box 4618, Panama City, Fla.
Brady Co., W. H., 727 W. Glendale Ave., Milwaukee 9, Wis.
Brandt Corp., The, 50-20 25th St., Long Island City 1, N. Y.
Branson Instruments, Inc., 37 Brown House Rd., Stamford, Conn.
Brass & Copper Imports, Inc., 4410 W. Lake Harriet Blvd., Minneapolis, Minn.
Breeze Corporations, Inc., Union, N. J.
Breidert Co., G. C., P. O. Box 1190, San Fernando, Calif.
Bremil Mfg. Co., 1020 Holland St., Erie, Pa.
Bressler Engineering Service, Oregon, Ill.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Bridgeport Brass Co., Hunter Douglas Div., 405 Lexington Ave., New York 17, N. Y.
Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., 155 Hill St., Milford, Conn.
Bright Leaf Industries, Inc., P. O. Box 3485, 306 W. Tremont Ave., Charlotte 3, N. C.
Brisk Metal Products, 720 Grand Ave., Ridgefield, N. J.
Bristol Co., The, P. O. Box 1790, Waterbury, Conn.
Broad Crane & Engineering Service Co., 779 S. Dumfries, Detroit 17, Mich.
Broan Mfg. Co., Inc., P. O. Box 140, Hartford, Wis.
Bronson Fan Mfg. Corp., 4560 Worth St., Los Angeles, Calif.
Bronze Bearings, Inc., 340 North Ave., Cranford, N. J.
Brook Motor Corp., 3302-04 W. Peterson Ave., Chicago 45, Ill.
Brooke Engineering Co., Inc., 4517 Wayne Ave., Philadelphia 44, Pa.
Brookfield Engineering Laboratories, Inc., 240 Cushing St., Stoughton, Mass.
Brooklyn Paint & Varnish Co., Inc., 50 Jay St., Brooklyn 1, N. Y.
Brooks Equipment Corp., 217 Hudson St., Hoboken, N. J.
Brooks Instrument Co., Inc., Hatfield, Pa.
Bros Inc., 1057 10th Ave., S. E., Minneapolis 14.
Brown Co., 150 Causeway St., Boston 14, Mass.
Brown-Brockmeyer Co., Inc., P. O. Box 989, Dayton 1, O.
Brown Fintube Co., 300 Huron St., Elyria, O.
Brown Products Corp., 1090 Springfield Road, Union, N.J.
Browning Mfg. Co., 1940 Browning Blvd., Maysville, Ky.
Brundage Co., The, 503 N. Park St., Kalamazoo 11, Mich.
Bruner Corp., 4767 N. 32nd St., Milwaukee 9, Wis.
Bruning Co., Inc., Charles, 1800 W. Central Rd., Mt. Prospect, Ill.
Brunner Div. of Dunham-Bush, Inc., 179 South St., West Hartford, Conn.
Bryan Steam Corp., P. O. Box 364, Peru, Ind.
Bryant Mfg. Co., 2020 Montcalm St., Indianapolis, Ind.
Bubar Dust Systems, Old Lyme, Conn.
Buckeye Mfg., Inc., 897 Ingleside, Columbus 8, O.
Buckeye Tools Corp., 5005 Springboro Pike, Dayton, O.
Budlew Products Co., 3535 W. Cortland, Chicago, Ill.
Buell Engineering Co., Inc., 123 Williams St., New York 38, N. Y.
Buensod-Stacey Corp., 45 W. 18th St., New York 11, N. Y.
Buffalo Forge Co., 171 Mortimer St., Buffalo 5, N. Y.
Buffalo Meter Co., Inc., 2917 Main St., Buffalo 14, N. Y.
Buffalo Pumps, Div. of Buffalo Forge Co., 171 Mortimer St., Buffalo 5, N. Y.
Buffalo Tank Corp., South Ave., Dunellen, N. J.
Building Service Co., 4923 18th Ave., S., Minneapolis 17, Minn.
Bulldog Div., Gregory Industries, Inc., 102-10 Toledo Ave., Lorain, O.
Bundy Tubing Co., 8109 E. Jefferson Ave., Detroit 14, Mich.
Bunker Hill Co., The, Sales & Fabrication Div., 660 Market St., San Francisco 4, Calif.
Burden Co., Alan E., 1940 Pontius Ave., Los Angeles 34, Calif.
Burdett Mfg. Co., 4920 S. Monitor, Chicago 38, Ill.
Burdett Oxygen Co. of Calif., 2014 Belgrave Ave., Huntington Park, Calif.
Burgess-Manning Co., Architectural Products Div., 749 E. Park Ave., Libertyville, Ill.
Burke & Co., 2902 Hyde Park Blvd., Los Angeles 43, Calif.
Burling Instrument Co., Air Conditioning Div., 16 River Rd., Chatham, N. J.
Burlis Products Co., 804 Hopkinson Ave., Brooklyn 12, N. Y.
Burnett, Jr., Inc., J. F., 928 Jefferson Ave., Rochester, N. Y.
Burnham Corp., Main St., Irvington, N. Y.
Burr Oak Tool & Gauge Co., P. O. Box 471, 1009 Prairie Ave., Sturgis, Mich.
Burrows Mfg. Co., F. A., P. O. Box 725, York, Pa.
Burt Mfg. Co., 41 E. South St., Akron 11, O.
Burtchaell Heating Co., 2944 S. E. Powell, Portland, Ore.
Burton Mfg. Co., Middlefield, O.
Bury Compressor Co., 18th & Cascade Sts., Erie, Pa.
Bux Magnetic Products, Inc., 1355 N. 10th St., San Jose, Calif.
Buxton Mfg. Co., P. O. Box 94, Dover, N. J.
By-Buk Co., 4314 West Pico Blvd., Los Angeles 19, Calif.
Byers Co., A. M., Clark Bldg., Pittsburgh 22, Pa.
Byron Jackson Pumps, Inc., A Subsidiary of Borg-Warner Corp., P. O. Box 2017, Terminal Annex, Los Angeles 54.

C

C & H Air Conditioning Fan Co., Inc., 1603 DeKalb Ave., N. E., Atlanta 6, Ga.
C.L.B. Co., P. O. Box 66031, Houston 6, Tex.
CRS Industries, Inc., 1405 Locust St., Philadelphia 2, Pa.
Cabot, Inc., Samuel, 246 Summer St., Boston, Mass.
Cady Metal Fabricating Co., 88 Schenck St., North Tonawanda, N. Y.
Cain Mfg. Inc., 1111 N. 5th Ave., Birmingham 4, Ala.
Cajon Machine Co., 902 E. 140th St., Cleveland 10, O.
Calbar, Inc., 2626 N. Martha St., Philadelphia 25, Pa.
Calculator Specialties Co., 122 S. Michigan Ave., Chicago 3, Ill.
Caldwell Co., W. E., 2120 Brook St., Louisville, Ky.
Calgon Co., Div. of Hagan Chemicals & Controls, Inc., P. O. Box 1346, Hagan Bldg., Pittsburgh 30, Pa.
California Brass Mfg. Co., 1447 Naud St., Los Angeles 12, Calif.
Caliputer, 3944 Riley St., San Diego 10, Calif.
Cambridge Filter Corp., 732 E. Erie Blvd., Syracuse 1, N. Y.
Camco Fittings, Inc., 301 State St., North Haven, Conn.
Cameron Iron Works, Inc., P. O. Box 1212, Houston, Tex.
Cam-Lok Div., Empire Products, Inc., P. O. Box 98, Cincinnati 36, O.
Camloc Fastener Corp., 22 Spring Valley Rd., Paramus, N. J.
Campbell Co., E. K., Manchester at 18th, Kansas City 26, Mo.
Campbell Co., J. A., 645 E. Wardlow Rd., Long Beach 7, Calif.
Campbell Heating Co., 3121 Dean Ave., Des Moines 17, Ia.
Campbell Mfg. Co., Inc., Boyertown, Pa.
Cam-Stat, Inc., Div. of The Paul Henry Co., 11833 West Olympic Blvd., Los Angeles 64, Calif.
Can Arm Corp., P. O. Box 156, Champlain, N. Y.
Cannon Chemical Co., Inc., 181 Portland St., Cambridge 41, Mass.
Canton Stoker Corp., 300 Andrew Place, S. W., Canton 1, O.

Canvas Products Co., 2115 Locust St., St. Louis 3, Mo.
Capac Mfg. Corp., P. O. Box 186, Capac, Mich.
Capitol Mfg. Co., Div. of Harsco Corp., 153 W. Fulton St., Columbus, O.
Capitol Pipe & Steel Products, Inc., Suburban Station Bldg., Philadelphia 3, Pa.
Carboline Co., The, 32 Hanley Ind. Court, St. Louis 17, Mo.
Cardox Corp., 307 N. Michigan Ave., Chicago, Ill.
Cardwell Machine Co., 1901 E. Franklin St., Richmond 11, Va.
Carey Electronic Engineering Co., Metal Wool Div., 1880 Clifton Ave., Springfield, O.
Carey Mfg. Company, Philip, Wayne Ave., Cincinnati 15, O.
Cargocaire Engineering Corp., 15 Park Row, New York 38, N. Y.
Carlin Co., The, 912 Silas Deane Hwy., Wethersfield 9, Conn.
Carling Turbine Blower Co., 8 Nebraska St., Worcester, Mass.
Carlon Products Corp., Chamberlain Rd., Aurora, O.
Carlson Rules Works, Disston Div., H. K. Porter Co., (Delaware), 1617 California St., Monrovia, Calif.
Car-Mon Products, Inc., 1541 W. Devon, Chicago, Ill.
Carnes, Inc., John R., Greenlawn Ave. & Erie R. R., Lima, O.
Carnes Corp., Verona, Wis.
Carney Co., Inc., The, Mankato, Minn.
Carolina Aniline & Extract Co., 301 S. Cedar St., Charlotte, N. C.
Carolina Blower Co., Inc., 428-436 Morehead Ave., Greensboro, N. C.
Carpenter Heating & Air Conditioning Co., 2135 St. Clair Ave., Cleveland 14, O.
Carpenter & Paterson, Inc., 18 Hurley St., Cambridge 41, Mass.
Carpenter Sales Corp., 4545 E. 71st St., Cleveland 5, O.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Carr Fastener Co., Div. of United Carr Fastener Corp., 31 Ames St., Cambridge, Mass.
Carrier Air Conditioning Co., Div. of Carrier Corp., Carrier Parkway, Syracuse 1, N. Y.
Carter Controls, Inc., 2800 Bernice Road, Lansing, Ill.
Carvell Heat Equipment Co., 1217 Temple St., Los Angeles 26, Calif.
Carver Pump Co., 1460 Hershey Ave., Muscatine, Ia.
Cash Co., A. W., P. O. Box 551, Decatur, Ill.
Cash Valve Mfg. Corp., A. W., 6621 E. Wabash Ave., Decatur, Ill.
Cashin Co., W. D., 69 A. St., Boston 27, Mass.
Catalytic Combustion Corp., 4725 14th St., Detroit 8, Mich.
Catawissa Valve & Fittings Co., Catawissa, Pa.
Caterpillar Tractor Co., Engine Div., Peoria, Ill.
Cauhorn Distributing Co., 20722 W. Seven Mile, Detroit 19, Mich.
Cavalier Corp., Electric Heating Div., 343 West First St., Chattanooga, Tenn.
Ceilcote, Inc., 4832 Ridge Rd., Cleveland 9, O.
Ceilheat, Inc., 5212 Homberg Drive, Box 10066, Knoxville, Tenn.
Celanese Corp. of America, P. O. Box 1414, Charlotte, N.C.
Celotex Corp., The, 120 S. La Salle St., Chicago 3, Ill.
Cement Lined Pipe Co., 93 Brookline St., Lynn, Mass.
Central Die Casting & Mfg. Co., Inc., 2935 W. 47th St., Chicago, Ill.
Central Foundry Co., The, 932 Broadway, New York 10, N. Y.
Central Iron & Wire Works, 401 S.E. 4th St., Des Moines 16, Ia.
Central Scientific Co., 1700 W. Irving Park, Chicago, Ill.
Central States Steel Boiler Co., 1755 N. Troy, Chicago, Ill.
Central Station Steam Co., 2920 E. Woodbridge St., Detroit 7, Mich.
Central Steel & Wire Co., P. O. Box 5310-A, Chicago 80, Ill.
Central Transformer Corp., P. O. Box 1753, Pine Bluff, Ark.
Centrifix Corp., 1017 Lehall, Houston 25, Tex.
Centri-Spray Corp., 39001 Schoolcraft Rd., Livonia, Mich.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Century Engineering Corp., 221-4th Ave., S. E., Cedar Rapids, Ia.
Century Fan & Ventilator Co., Inc., 259 Main St., Stamford, Conn.
Century Instrument Co., 220 East Milwaukee St., Detroit, Mich.
Cepi-American, Inc., 4053 May St., Hillside, Ill.
Ceramic Cooling Tower Co., Div. Acme Brick Co., 2821 W. 7th St., Ft. Worth, Tex.
Certified Flexible Couplings, Inc., 39 N. Bond St., Mt. Vernon, N. Y.
Chace Co., W. M., 1606 Beard Ave., Detroit 9, Mich.
Chain Belt Co., 4621 W. Greenfield, Milwaukee 1, Wis.
Chamberlin Co. of America, 13534 Woodward Ave., Detroit 3, Mich.
Champion Blower & Forge Co., Harrisburg Ave., and Charlotte St., Lancaster, Pa.
Champion-DeArment Tool Co., Meadville, Pa.
Champion Furnace Pipe Co., 120 Morton St., P. O. Box 950, Peoria, Ill.
Champion Pneumatic Machinery Co., 825 N. Pleasant St., Princeton, Ill.
Channel Master Corp., Ellenville, N. Y.
Chaplin-Fulton Mfg. Co., 5800 Grand Ave., Pittsburgh 25, Pa.
Chapman Valve Mfg. Co., The, Indian Orchard, Springfield, Mass.
Char-Gale Mfg. Co., 4325 Hiawatha Ave., Minneapolis 6, Minn.
Charles Machine Co., 1530 B. St., Perry, Okla.
Chase Brass & Copper Co., 236 Grand St., Waterbury 20, Conn.
Chase & Sons, Inc., 26 Spruce St., North Quincy, Mass.
Chatleff Valve & Mfg. Co., 205 Industrial Blvd., Austin 66, Tex.
Chelsea Fan & Blower Co., Inc., Subsidiary of Chelsea Products, Inc., 639 South Ave., Plainfield, N. J.
Chelsea Metal Stamping Co., 95 8th Ave., New York 11, N. Y.
Chem Industrial Co., 3784 Ridge Rd., Brooklyn 9, O.
Chemical Coatings & Engineering Co., 221 Brooke St., Media, Pa.
Chemical Solvent Co., P. O. Box 487, Birmingham, Ala.
Chemical Specialty Div. of Shooz Polish Mfg. Co., 1013 W. Oklahoma Ave., Milwaukee 15, Wis.
Chemicals Div., Firestone Plastics Co., Pottstown, Pa.
Chemiquip Co., 36 E. 10th St., New York 3, N. Y.
Chemo Products Inc., Pulaski St., W. Warwick, R. I.
Chemtrol, Plastic Piping Systems Equipment, 404 W. Central, Santa Ana, Calif.
Cheney Flashing Co., 623 Prospect St., Trenton 5, N. J.
Chesapeake & Ohio Railway Co., Terminal Tower, Cleveland 1, O.
Chesflex Div., St. Regis Paper Co., 684 Nepperhan Ave., Yonkers, N. Y.
Chester Cable Corp., Subsid. of Tennessee Corp., Chester, N. Y.
Chesterton Co., A. W., 6 Ashland St., Everett 49, Mass.
Chicago Belting Div., Chicago-Allis Mfg. Corp., 113-125 N. Green St., Chicago 7, Ill.
Chicago Blower Corp., 9867 Pacific Ave., Franklin Park, Ill.
Chicago Bridge & Iron Co., 332 S. Michigan Ave., Chicago 4, Ill.
Chicago Die Casting Mfg. Co., 2510-14 W. Monroe St., Chicago 12, Ill.
Chicago Expansion Bolt Co., 1338 W. Concord Pl., Chicago 22, Ill.
Chicago Float Works, Not Inc., Dept. T., 2330 S. Western Ave., Chicago 8, Ill.
Chicago Forging and Mfg. Co., 2000 Southport Ave., Chicago 14, Ill.
Chicago Gasket Co., 1271 West North Ave., Chicago 22, Ill.
Chicago Metal Mfg. Co., 3724 S. Rockwell St., Chicago 32, Ill.
Chicago Metallizing Co., 3321 S. Pulaski Rd., Chicago, Ill.
Chicago Molded Products Corp., 2733 N. Normandy Ave., Chicago, Ill.
Chicago Nipple Mfg. Co., 650 Lake St., Oak Park, Ill.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.
Chicago Pump Hydrodynamics Div., Food Machinery & Chemical Corp., 622 Diversey Pkwy., Chicago 14, Ill.
Chicago Specialty Mfg. Co., 2954 Lawrence Ave., Chicago 25, Ill.
Chicago Steel Furnace Co., 2350 Lunt Ave., Elk Grove, Ill.
Chicago Steel Tank Co., Div. of U. S. Industries, Inc. 6400 W. 66th, Chicago 38, Ill.
Chicago-Wilcox Mfg. Co., 7701 Avalon Ave., Chicago 19, Ill.
Chicopee Mills, Inc., 47 Worth St., New York, N. Y.
Chiksan Co., 330 N. Brea Blvd., Brea, Calif.
Childers Mfg. Co., P. O. Box 7467, Houston 8, Tex.
Chisholm-Moore Hoist Div., Columbus McKinnon Corp., Tonawanda, N. Y.
Chrysler Corp., Airtemp Div., 1600 Webster St., Dayton 4, O.
Cincinnati Electrical Tool Co., The, 300 Mt. Hope Ave., Cincinnati 8, O.
Cincinnati Fan and Ventilating Co., 3548 Montgomery Ave., Cincinnati.
Cincinnati Shaper Co., P. O. Box 111, Cincinnati 11, O.
Cincinnati Time Recorder Co., 1733 Central Ave., Cincinnati 14, O.
Circle-Air Industries, Inc., 244 Herkimer St., Brooklyn 16, N. Y.
Circle Clamp Div., Cuyahoga Products Corp., 10252 Berea Rd., Cleveland 2, O.
Circle Seal Products Co., Inc., 2181 E. Foothill Blvd., Pasadena 8, Calif.
Circuit Protective Devices Dept., General Electric Co., Woodford Ave., Plainville, Conn.
Cissell Mfg. Co., W. M., 831 South First St., P. O. Box 1143, Louisville 1, Ky.
Clarage Fan Co., 1 Clarage Pl., Kalamazoo, Mich.
Clark Bros. Bolt Co., Milldale, Conn.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, O.
Clark-Cooper Co., Inc., CC Pump Div., Market-Madison Sts., Palmyra, N. J.
Clark Flexible Link Shaft Co., P.O. Box 73, Newton Highlands 61, Mass.
Clark Mfg. Co., 1830 E. 38th St., Cleveland 14, O.
Claronex Products, Inc., 239 Java St., Brooklyn 22, N. Y.
Clauss Cutlery Co., Fremont, O.
Cla-Val Co., 17th & Placentia, Newport Beach, Calif.
Clay Equipment Corp., Cedar Falls, Ia.
Clayton & Lambert Mfg. Co., 1701 Dixie Hwy., Louisville 10, Ky.
Clayton Mfg. Co., 401 N. Temple City Blvd., El Monte, Calif.
Clayton Mark & Co., 1900 Dempster, Evanston, Ill.
Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis.
Cleveland Brass Mfg. Co., The, P. O. Box 158, Kinsman, O.
Cleveland Controls, Inc., 1111 Brookpark Rd., Cleveland 9, O.
Cleveland Crane & Eng. Co., 5866 E. 289th St., Wickliffe, O.
Cleveland Graphite Bronze, Div. of Clevite Corp., 17000 St. Clair Ave., Cleveland 10, O.
Cleveland Heater Co., The, 2310 Superior Ave., Cleveland 14, O.
Cleveland Humidifier Co., 7802 Wade Park Ave., Cleveland 3, O.
Cleveland Punch & Shear Works Co., E. 40th and St. Clair Ave., Cleveland 14, O.
Cleveland Worm & Gear Div., Eaton Mfg. Co., 3300 E. 80th St., Cleveland 4, O.
Climax Metal Products Co., 863 E. 140 St., Cleveland 10, O.
Clinton Metallic Paint Co., Clinton, N. Y.
Clipper Mfg. Co., 65 E. 28th St., Kansas City 8, Mo.
Clover Industries Inc., Dept. 1, 588 Young St., Tonawanda, N. Y.
Clow & Sons, Inc., James B., 201-299 N. Talman Ave., Chicago 12, Ill.
Cobell Industries, Inc., 600 South Wilhite St., Cleburne, Tex.
Cobra Metal Hose Div., D-K Mfg. Co., 5059 S. Kedzie, Chicago, Ill.
Cobra Pipe Supply & Coil Co., Inc., Brook St., P. O. Box 176, Elmwood 10, Conn.
Cochrane Corp., 3131 N. 17th St., Philadelphia 32, Pa.
Coe Mfg. Co., Bank St., Painesville, O.
Coen Controls Co., Inc., 40 Boardman Pl., San Francisco 3, Calif.
Coffin Turbo Pump, Hydrodynamics Div., Food Machinery & Chemical Corp., 326 S. Dean St., Englewood, N. J.
Coffing Hoist Div., Duff-Norton Co., Charlotte, N. C.
Cole-Sewell Engineering Co., 2288 University Ave., St. Paul 14, Minn.
Coleman Co., Inc., The, 250 N. St. Francis St., Wichita 1, Kans.
Colgate Co., Charles A., 528 Washington Rd., Pittsburgh 28, Pa.
Collins Machinery Corp., 955 Monterey Pass Rd., Monterey Park, Calif.
Colonial Plastics Mfg. Co., Industrial Div., 2685 E. 79th St., Cleveland 4, O.
Colt Ventilation of America, Inc., 4652 Hollywood Blvd., Los Angeles 27, Calif.
Columbia Boiler Company of Pottstown, Pottstown, Pa.
Columbia Cement Co., Inc., 150 Ingraham St., Brooklyn 37, N. Y.
Columbia Electric Mfg. Co., 4519 Hamilton Ave., Cleveland 14, O.
Columbia Engineering Service Co., 4025 Sebastopol Hiway, Santa Rosa, Calif.
Columbia-Geneva Steel Div., United States Steel Corp., 120 Montgomery St., San Francisco 6, Calif.
Columbiamatic "8" Corp., The, Syracuse 1, N. Y.
Columbian Vise & Mfg. Co., 9021 Bessmer, Cleveland, O.

Columbia Technical Corp., 61-02 Thirty-First Ave., Woodside 77, N. Y.
Columbus Steam Pump Wks. Co., 724 W. Gay St., Columbus 22, O.
Combination Pump Valve Co., 851 Preston St., Philadelphia 4, Pa.
Combustion Engineering Inc., 200 Madison Ave., New York 16, N. Y.
Combustion Engineering, Inc., Raymond Div., 427 W. Randolph St., Chicago 6, Ill.
Combustion Equipment Co., 1202 15th St., Moline, Ill.
Comfort Products Inc., P. O. Box 8568, 440 Hillburn Dr., Dallas 16. Tex.
Commercial Filters Corp., 2 Main St., Melrose 76, Mass.
Commercial Heater Co., P. O. Box 4525, Ft. Worth, Tex.
Commercial Plastics Co., 945 George St., Chicago 14, Ill.
Commercial Shearing & Stamping Co., 1775 Logan, P. O. Box 239, Youngstown 1, O.
Commercialaire Corp. of America, 840 E. 98th St., Brooklyn 36, N. Y.
Committee of Steel Pipe Producers, American Iron and Steel Institute, 150 E. 42nd St., New York 17, N. Y.
Commonwealth Brass Corp., 5781-5835 Commonwealth Ave., Detroit 8.
Concrete Thermal Casings, 2107 N. 34th St., Seattle 3, Wash.
Cond-Air Div., Elliott Engineering Co., 2800 E. Century Blvd., Lynwood, Calif.
Condensation Engineering Corp., 3511 W. Potomac Ave., Chicago 31
Condenser Service & Engineering Co., Inc., 150 Observer Highway Hoboken, N. J.
Conditioned Air, Inc., P. O. Box 2429, Charleston, W. Va.
Congress Drives Div., Tann Corp., 3750 E. Outer Drive, Detroit 34.
Conley Plastic Corp., Ed, 91st & Delaware, Tulsa, Okla.
Conneaut Plastic Metallic Packing Co., Conneaut, O.
Connecticut Hard Rubber Co., 407 East St., New Haven 9, Conn.
Connor Engineering Corp., Danbury, Conn.
Conoflow Corp., Subsidiary of Walworth Co., Dept. P, 2100 Arch St., Philadelphia 3, Pa.
Consolidated Diesel Electric Corp., Canal & Ludlow Sts., Stamford, Conn.
Consolidated General Products, Inc., 24th & Nicholson Sts., Houston 8.
Consolidated Pipe Co. of America, 1066 Home Ave., Akron 10, O.
Constad Laboratories, 85-02 162nd St., Jamaica 32, N. Y.
Construction Specialties, Inc., 55 Winans Ave., Cranford, N. J.
Consumer Products, Motor Wheel Corp., Lansing 3, Mich.
Continental Air Filters, Inc., Box 1647, Louisville 1, Ky.
Continental-Diamond Fibre Corp., Newark, Del.
Continental Electric Co., Inc., 323 Ferry St., Newark, N. J.
Continental Equipment Co., Div. of Fisher Governor Co., Coraopolis, Pa.
Continental Machine Co., 2345 W. Nelson St., Chicago 18, Ill.
Continental Mfg. Co., P. O. Box 4048, Stansbury Rd. & B&O RR, Baltimore 22, Md.
Continental Mfg. Co., 4545 Alpine Rd., Cincinnati 42, O.
Continental Mfg. Co., S. Main St., Coraopolis, Pa.
Continental Products Co., 1150 E. 222nd St., Euclid 17, O.
Continental Radiant Glass Heating Corp., 4 West 40th St., New York 18, N. Y.
Continental Rubber Wks., 1935 Liberty St., Erie, Pa.
Continental Screw Co., Mt. Pleasant St., New Bedford, Mass.
Continental Tapes, Cayce, S. C.
Contour Marker Corp., 1843 E. Compton Blvd., Compton 2, Calif.
Controlair Mfg. Co., 1932 S. Compton Ave., Los Angeles, Calif.
Controls Co. of America, Heating & Air Conditioning Div., 2450 N. 32nd St., Milwaukee 45, Wis.
Controls Co. of America, Soreng Div., 9555 Soreng Ave., Schiller Park, Ill.
Convector Corp., 52 Canal St., Washington, D. C.
Cook Co., Loren, 640 N. Rocky River Dr., Berea, O.
Cook Electric Co., 2700 Southport Ave., Chicago 14, Ill.
Cool-Ette, Inc., 7535 W. 8 Mile Rd., Detroit 21, Mich.
Cooley Co., E. C., 1186 Folsom St., San Francisco, Calif.
Cooper Alloy Corp., Bloy St. & Ramsey Ave., Hillside 5, N. J.
Cooper-Bessemer Corp., The, Mt. Vernon, O.
Cooper Hewitt Electric Co., Div. of Sperti-Faraday, Inc., 720-732 Grand St., Hoboken, N. J.
Copeland Refrigeration Corp., Sidney, O.
Copes-Vulcan Div., Blaw-Knox Co., 939 West 26th St., Erie 4, Pa.
Coppus Engineering Corp., 344 Park Ave., Worcester 10, Mass.
Corbin Hose Clamp Div., American Hardware Corp., New Britain, Conn.
Corbman Bros., Inc., 25th & York St., Philadelphia, Pa.
Corcoran Co., R. S., P. O. Box 1404, Mound and Brandon, Joliet, Ill.
Cordo Chemical Corp., 34 Smith St., Norwalk, Conn.
Corite-Reynolds Corp., 455 Jarvis Ave., Des Plaines, Ill.
Corley Co., Inc., The, 685 Myrtle Ave., Bounton, N. J.
Corning Glass Works, Corning, N. Y.
Cornish-Wire Co., Inc., 101 Water St., Williamstown, Mass.
Coroshield Co., Ltd., 250 W. 57 St., New York 19, N. Y.
Corrosion Control Co., Inc., 33 W. 42nd St., New York 36, N. Y.
Corrosite Div., Reliance Paint Co., 64 So. 6th St., Brooklyn, N. Y.
Corro-Vent, Inc., 2816 Spring Grove Ave., Cincinnati 25, O.
Coughlan Co., G. N., West Orange, N. J.
Couplings Co., 2205 W. Roosevelt Rd., Chicago 8, Ill.
Courier Associates, Inc., 570 Lexington Ave., New York, N. Y.
Cox & Co., Inc., 115 E. 23rd St., New York, N. Y.
Cox Mfg. Co., Ridgeville, Ind.
Cramer Controls Corp., Centerbrook, Conn.
Crane Associates, Robert S., 500 Hutton Place, Columbus, O.
Crane Co., 155 N. Wacker Dr., Chicago 6, Ill.
Crane Packing Co., 6458 Oakton St., Morton Grove, Ill.
Crawford Co., 3220 W. 31st St., Chicago 23, Ill.
Crawford Fitting Co., 884 East 140th St., Cleveland 10, O.
Crescent Insulated Wire & Cable Co., Trenton 5, N. J.
Crescent Plastics, Inc., 955 Diamond Ave., Evansville, Ind.
Crescent Tool Co., 230 Harrison St., Jamestown, N. Y.
Croker Fire Protection Co., 32 W. 31st St., New York, N. Y.
Croll-Reynolds Engineering Co., Inc., 1122 Main St., Stamford, Conn.
Croll & Son, Jesse G., 2326-2606 Germantown Ave., Philadelphia, Pa.
Crosby Valve & Gage Co., 43 Kendrick St., Wrentham, Mass.
Crotty Mfg. Corp., 133-15 35th Ave., Flushing, L. I., N. Y.
Crown Controls Co., Inc., 40-44 S. Washington St., New Bremen, O.
Crown Engineer Corp., Locust St., Keyport, N. J.
Crucible Steel Co. of America, P. O. Box 88, Pittsburgh 30, Pa.
Cryer Trap & Valve Div., Encor Corp., 28 Joralemon St., Belleville, N. J.
Culligan Inc., Northbrook, Ill.
Cummins Portable Tools, Div. of John Oster Mfg. Co., 5055 N. Lydell Ave., Milwaukee 17, Wis.
Cuno Engineering Corp., 78 S. Vine St., Meriden, Conn.
Curtis Development & Mfg. Co., 3298 N. 33rd St., Milwaukee 16, Wis.
Curtis Mfg. Co., Refrigeration Div., 1950 Kienlen Ave., St. Louis 33, Mo.
Custanite Corp., 1228 Utica Ave., Brooklyn 3, N. Y.
Cutler-Hammer, Inc., 421 N. 12th St., Milwaukee 1, Wis.
Cyclotherm Div., Crane Co., 157 E. First St., Oswego, N. Y.

D

Dahl Co., Inc., G. W., 86 Tupelo St., Bristol, R. I.
Dalzen Mfg. Co., 4600 Bree Rd., St. Clair, Mich.
Damascus Tube Co., Greenville, Pa.
Dampney Co., The, 50 Business St., Hyde Park, Boston 36, Mass.
Dana Fan & Blower Corp., 49 Central Ave., Cincinnati 2, O.
Danielson Mfg. Co., Danielson, Conn.
Darcoid Co., Inc., 145 Sixth Ave., New York 13, N. Y.
Darling Valve & Mfg. Co., 701 First St., Williamsport, Pa.
Das Div. of The Zeller Corp., Fort Wayne Rd., Defiance, O.
Davey Compressor Co., Kent, O.
David-Ludwig Co., 14290 Goddard, Detroit 12, Mich.
Davidson Co., M. T., 7 Dey St., New York 7, N. Y.
Davidson Fan Co., 213 California St., Newton 58, Mass.
Davis Engineering Div., Tube Reducing Corp., 520 Main Ave., Wallington, N. J.
Davis Instruments, Div. of Davis Emergency Equipment Co., Inc., 201 Halleck St., Newark 4, N. J.
Davis Mfg. Inc., 1301 South Handley, Wichita 13, Kans.
Davis Regulator Co., 2546 S. Washtenaw Ave., Chicago 8, Ill.
Day Co., The, 810-830 Third Ave., N. E., Minneapolis 13, Minn.
Dayco Corp., 2342 W. Riverview Ave., Dayton 1, O.
Day & Night Mfg. Co., 855 Anaheim-Puente Rd., LaPuente, Calif.
Daystrom, Inc., Weston Instruments Div., 614 Frelinghuysen Ave., Newark 12, N. J.
Dayton Automatic Stoker Co., 1910 W. Dorothy Lane, Dayton 39, O.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Dayton Industrial Products Co., 2001 Janice Ave., Melrose Park, Ill.
Dayton Rogers Mfg. Co., 2824 13th Ave. S., Minneapolis 7, Minn.
Daytronic Corp.. 216 S. Main St., Dayton 2, O.
Dean Brothers Pumps, Inc., 323 W. 10th St., Indianapolis 7, Ind.
Dean Hill Pump Co., 4000 E. 16th St., Indianapolis 7, Ind.
Deansteel Products Co., 111 Merchants St., San Antonio, Tex.
Dean Products, Inc., 1042 Dean St., Brooklyn 38, N. Y.
Dearborn Chemical Co., Merchandise Mart Plaza, Chicago 54, Ill.
Dearborn Stove Co., 1700 W. Commerce St., P. O. Box 5527, Dallas 2, Tex.
Debevoise Co., The, 74-84 20th St., Brooklyn 32, N. Y.
DeBothezat Fans Div., American Machine and Metals, Inc., East Moline, Ill.
Decatur Pump Co., 2750 Nelson Park Rd., Decatur, Ill.
Defender Instrument & Regulator Co., Boody, Ill.
Degree Corp., 1706 Kansas Ave., Kansas City 5, Kans.
Dehydrosal Systems, Inc., 521 Fifth Ave., New York 17, N. Y.
De Laval Steam Turbine Co., 871 Nottingham Way, Trenton 2, N. J.
Delavan Mfg. Co., 811 Fourth St., West Des Moines, Ia.
Delaware Insulation Co., 5th Ave. & Colman St., Wilmington, Del.
Delbrook Engineering, Inc., 65 Lansdowne St., Cambridge, Mass.
Delco Appliance Div., General Motors Corp., P. O. Box 230, Rochester 1, N. Y.
Delco Moraine Div., General Motors Corp., Dayton 1, O.
Delco Products Div., General Motors Corp., 329 E. First St., Dayton 1, O.
Delta Welder Corp., 8525 Livernois, Detroit 4, Mich.
Deltron, Inc., 2905 Leithgow St., Philadelphia, Pa.
Deming Co., 14 Aetna St., Salem, O.
Demo-Haines Tool Corp., 2151 East Rosecrans, El Segundo, Calif.
Demuth & Sons, Inc., Charles, 245 Elm Place, Mineola, L. I., N. Y.
Denbo Engineering and Sales Co., Inc., 3301 Martindale Ave., Indianapolis, Ind.
Dennis Chemical Co., 2701 Papin, St. Louis, Mo.
Dersch, Gesswein & Neuert, Inc., 4849 W. Grand Ave., Chicago 39, Ill.
Design Engineers, 214 S. Church St., Rockford, Ill.
Desmond-Stephan Mfg. Co., Urbana, O.
Desomatic Products Div., Atlantic Research Corp., 1109 W. Broad St., Falls Church, Va.
d'Este Div., Kaye & MacDonald, Inc., 11-15 Central Ave., West Orange, N. J.
De-Tec-Tronic Corp., 2512 N. Halsted St., Chicago 14, Ill.
Detroit Deisel Engine Div., General Motors Corp., 13400 W. Outer Dr., Detroit 28, Mich.
Detroit Float & Stamping Co., 625 Monroe, Detroit, Mich.
Detroit Hoist & Machine Co., 8200 Morrow St., Detroit 11, Mich.
Detroit Stamping Co., 350 Midland Ave., Detroit 3, Mich.
Detroit Stoker Co., 1510 East 1st St., Monroe, Mich.
Deutsch Controls Corp., 14504 So. Figueroa, Los Angeles 61, Calif.
Devco Engineering, Inc., Control Systems Div., Pier Lane West, Caldwell Township, Caldwell, N. J.
Devcon Corp., Danvers, Mass.
Devices, Inc., A Div. of Miracle Adhesives Corp., 250 Pettit Ave., Bellmore, N. Y.
DeVilbiss Co., The, 300 Phillips Ave., Toledo 1, O.

DeVilbiss Metal Fabricators Co., 17900 Ryan Rd., Detroit 12, Mich.
Devine Mfg. Co., Inc., J. P., 49th and A.V.R.R., Pittsburgh 1, Pa.
Dewey Gas Furnace Co., 101 E. Baltimore Ave., Detroit 2, Mich.
De Zurik Corp., Sartell, Minn.
Dialatemp, Inc., 706 Chestnut St., St. Louis 1, Mo.
Dialight Corp., 60 Stewart Ave., Brooklyn 37, N. Y.
Diamond Core & Saw Div., Portomag, Inc., 1521 E. Nine Mile Rd., Ferndale 20, Mich.
Diamond Expansion Bolt Co., Inc., 500 North Ave., Garwood, N. J.
Diamond Machine Tool Co., 5111 Coffman-Pico Rd., Pico, Calif.
Diamond Mfg. Co., 253 W. Eighth St., Wyoming, Pa.
Diamond Power Specialty Corp., P. O. Box 415, Lancaster, O.
Diamond Products, Inc., 333 Prospect St., Elyria, O.
Diamond Tool & Horseshoe Co., Duluth, Minn.
Dia-Plug Valve Corp., 1622 Fillmore Ave., Buffalo, N. Y.
Dickson Co., The, 7422 Woodlawn Ave., Chicago 19, Ill.
Dielectric Products Co., Inc., 125 Virginia Ave., Jersey City 5, N. J
Dietz Co., Inc., Henry G., 12-16 Astoria Blvd., Long Island City 2, N. Y.
Dietzgen Co., Eugene, 2425 N. Sheffield Ave., Chicago 14, Ill.
Dillon & Co., Inc., W. C., 14620 Keswick St., Van Nuys, Calif.
Dillon Steam Boiler Wks., Inc., D. M., Crocker St., Fitchburg, Mass.
Dings Magnetic Separator Co., 4720 W. Electric Ave., Milwaukee 46.
Divac Div., Acme Machine Works, 13025 Cerise, Hawthorne, Calif.
Division Lead Co., 7742 W. 61st Pl., Summit, Ill.
Dixie Raydiant Electric Heat Corp., 66 Eleventh St., N. E., Atlanta 9, Ga.
Dixon Crucible Co., Joseph, Wayne & Monmouth Sts., Jersey City 3, N. J.
Dockson Corp., 3839 Wabash Ave., Detroit 8, Mich.
Dodge Fibers Corp., Hoosick Falls, N. Y.
Dodge Mfg Corp., 500 S. Union St., Mishawaka, Ind.
Doerr Electric Corp., 508 N. 4th St., Cedarburg, Wis.
Dole Refrigerating Co., 5910 N. Pulaski, Chicago 46, Ill.
Dole Valve Co., The, 6201 Oakton St., Morton Grove, Ill.
Dollinger Corp., 9 Centre Park, Rochester 3, N. Y.
Domestic Mfg. Corp., 2415 McAllister, Houston 24, Tex.
Domestic Pump & Mfg. Corp., Shippensburg, Pa.
Donaldson Power Ventilator Co., 2915 Knox Ave., Los Angeles 39, Calif.
Donie Engineering Sales, Inc., 5420 College Ave., Indianapolis 20, Ind.
Dorak Products Corp., 78 Pearl St., New York 4, N. Y.
Dormeyer Industries, 3418 Milwaukee Ave., Chicago 41, Ill.
Dormont Mfg. Co., 5607 Butler St.. Pittsburgh 1, Pa.
Dotmar Industries, Inc., 502 Hanselman Bldg., Kalamazoo, Mich.
Dover Corp., Peerless Mfg. Div., P. O. Box 2015, Louisville 10, Ky.
Dow Chemical Co., The, Midland, Mich.
Dow Corning Corp., Midland, Mich.
Dowell Div. of The Dow Chemical Co., P. O. Box 536, Tulsa 1, Okla.
Downingtown Iron Works, Inc., Div. of Pressed Steel Tank Co., Wallace Ave., Downingtown, Pa.
Doyle & Roth Mfg. Co., Inc., Foot of 23rd St., Brooklyn 32, N. Y.
Doyle Vacuum Cleaner Co., 225 Stevens St., S. W., Grand Rapids 2, Mich.
Drage Products, Inc., 406 32nd St., Union City, N. J.
Dragon Engineering Co., P. O. Box 185, Norwalk, Conn.
Dravo Corp., Machinery Div., Dravo Bldg., Pittsburgh 22, Pa.
Drayer-Hanson Div., Crane Co., Box 2215, Terminal Annex, Los Angeles 54, Calif.
Dreier Brothers Inc., 7301 Woodlawn Ave., Chicago 19, Ill.
Dreis & Krump Mfg. Co., 7404 Loomis Blvd., Chicago 36, Ill.
Dresser Mfg. Div., Dresser Industries, Inc., 49 Fisher Ave., Bradford, Pa.
Drew & Co., Inc., E. F., 15 E. 26th St., New York 10, N. Y.
Driam Corp., The, Manitowac, Wis.
Drico Industrial Corp., 100 8th St., Passaic, N. J.
Dryer Dynamics Corp., Page & Schuyler Aves., Lyndhurst, N. J.
Drying Systems Co., 1812½ W. Foster Ave., Chicago 40, Ill.
Dryomatic Corp., 715 N. Fayette St., P. O. Box 591, Alexandria, Va.
Ducon Co., Inc., The, 147 E. 2nd St., Mineola, N. Y.
Dudgeon, Inc., Richard, 789 Bergen St., Brooklyn 38, N. Y.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Dunkirk Radiator Corp., Dunkirk, N. Y.
du Pont de Nemours & Co., E. I., Electrochemicals Dept., Wilmington 98, Del.
du Pont de Nemours & Co., E. I., Explosives Dept., Chemical Sales, Wilmington 98, Del.
du Pont de Nemours & Co., E. I., Finishes Div., Wilmington 98, Del.
du Pont de Nemours & Co., Inc., E. I., "Freon" Products Div., Wilmington 98, Del.
du Pont de Nemours & Co., E. I., Photo Products Dept., Wilmington 98, Del.
du Pont de Nemours & Co., Inc., E. I., Polychemicals Dept., Wilmington 98, Del.
Durabla Mfg. Co., 114 Liberty St., New York 6, N. Y.
Durable Rubber Products, 1907 N. Mendell, Chicago, Ill.
Duralast Products Corp., 1601 Thalia St., New Orleans 18, La.
Durant Insulated Pipe Co., 325 Demeter St., E. Palo Alto, Calif
Durant Insulated Pipe Co., Inc., 4500 Euclid Ave., Cleveland 3, O.
Dura-Vent Corp., 2525 El Camino Real, Redwood City, Calif.
Durez Plastics Div., Hooker Chemical Corp., 1953 Walck Rd., North Tonawanda, N. Y.
Duriron Co., Inc., The, 450 N. Findlay St., Dayton 1, O.
Durkee-Atwood Co., 215 N. E. 7th St., Minneapolis, Minn.
Duro Co., The, 537 E. Monument Ave., Dayton 1, O.
Duro-Dyne Corp., Route 110, Farmingdale, Long Island, N. Y.
Duro Metal Products Co., 2649 N. Kildare Ave., Chicago 39, Ill.
Dustender Co., 3627 Pontiac Rd., Ann Arbor, Mich.
Dust Filter Co., 134 S. La Salle St., Chicago 3, Ill.
Dust Suppression & Engineering Co., P. O. Box 67, Lake Orion, Mich.
Dustex Corp., 1758 Walden Ave., Buffalo 25, N. Y.
DuVerre, Inc., 374 Delaware Ave., Buffalo 2, N. Y.
Dwyer Mfg. Co., F. W., P. O. Box 373, Michigan City, Ind.
Dyfoam Corp., 202 E. Cherry, Newcastle, Pa.
Dynametrics Corp., Northwest Industrial Park, Burlington, Mass.
Dynamic Air Engineering, Inc., 7412 Maie Ave., Los Angeles 1, Calif.
Dynapump Div., Fostoria Corp., Buck & County Line Rds., Huntingdon Valley, Pa.

E

Eagan Co., Inc., Walter H., 2337 Wallace St., Philadelphia 30, Pa.
Eagle Chemical Co., Inc., Box 107, Mobile, Ala.
Eagle Copper Products Co., Inc., 600 Johnson Ave., Brooklyn, N. Y.
Eagle-Picher Co., American Bldg., Cincinnati 1, O.
Earle Gear & Machine Co., 4707 Stenton Ave., Philadelphia, Pa.
Eastern Boiler & Electronics Corp., Canterbury St., Manchester, Conn.
Eastern Industries Inc., 100 Skiff St., Hamden 14, Conn.
Eastern Stainless Steel Corp., P. O. Box 1975, Baltimore 3, Md.
Eastman Chemical Products, Inc., Subsidiary, Eastman Kodak Co., Kingsport, Tenn.
Easton R. S. Corp., 4907 Farragut Rd., Brooklyn 3, N. Y.
Eaton Air Filter Co., 2609 E. Larned, Detroit, Mich.
Eaton Mfg. Co., Foundry Div., 700 E. Huron Ave., Vassar, Mich.
Ebco Mfg. Co., 265 N. Hamilton Rd., Columbus 13, O.
Ebert Electronics Corp., 212-26 Jamaica Ave., Queens Village 28, N. Y.
Eclipse Boiler Div., Eclipse Fuel Engineering Co., Manufacturers Rd. & Compress St., Chattanooga 5, Tenn.
Eclipse Fuel Engineering Co., 1139 Buchanan St., Rockford, Ill.
Eco Engineering Co., 12 New York Ave., Newark 1, N. J.
Econo Products Company Inc., Div. of Viking Instruments, Inc., East Haddam, Conn.
Economy Engineering Co., 4511 W. Lake St., Chicago 24, Ill.
Economy Valve Seat Co., 3001 Grant St., Bellwood, Ill.
Eddington Metal Specialty Co., 3088 Bristol Pike, Eddington, Pa.
Eddy Valve Co., Waterford, N. Y.
Eder Instrument Co., 2293 N. Clybourn Ave., Chicago, Ill.
Edgewood Mfg. Co., 2215 Merced Ave., El Monte, Calif.
Edison Industries, Thomas A., Instrument Div., McGraw-Edison Co., 60 Lakeside Ave., West Orange, N. J.
Eds-Wil Burner Corp., 3737 N. Lincoln, Chicago 13, Ill.
Edward Valves, Inc., 1200 W. 145th St., East Chicago, Ind.
Edwards, L. V., 32 Irving Place, Rockville Center, N. Y.
Edwards Engineering Corp., Pompton Plains, N. J.
Eisler Engineering Co., Inc., 750 S. 13th St., Newark 3, N. J.
Ejay Baseboard Mfg. Co., 124 Boyd St., Winsted, Conn.
Elastic Porcelain Lining Corp., 221 Norris Dr., Rochester 10, N. Y.
Elcen Metal Products Co., 9325 King St., Franklin Park, Ill.
Elco Tool & Screw Corp., 1111 Samuelson Rd., Rockford, Ill.
Electrend Products Corp., 606 Water St., St. Joseph 2, Mich.
Electric Arc, Inc., 152 Jelliff Ave., Newark 8, N. J.
Electric Autolite, Toledo 1, O.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Electric Controller & Mfg. Co., Div. of Square D Co., 4526 Lee Rd., Cleveland 28, O.
Electric Furnace-Man, Inc., Emmaus, Pa.
Electric Heater Specialty Co., 21 E. 8th St., New York 3, N. Y.
Electric Heating & Cooling, Inc., 890-898 Broadway, Newark 4, N. J.
Electric Hose & Rubber Co., Wilmington, Del.
Electric Machinery Mfg. Co., 800 Central Ave., Minneapolis 13, Minn.
Electric Motors & Specialties, Inc., King & Hamsher Sts., Garrett, Ind.
Electric Products Co., 1725 Clarkstone Rd., Cleveland, O.
Electriliving Corp., 4913 College Ave., Indianapolis 5, Ind.
Electro-air Cleaner Co., Inc., Olivia & Sproul Sts., McKees Rocks, Pa.
Electro-Chemical Products Corp., 16190 Saranac Rd., Cleveland 10, O.
Electro Dynamic Div., General Dynamics Corp., Bayonne, N. J.
Electrofilm, Inc., P. O. Box 106, North Hollywood, Calif.
Electrol Burner Mfg. Co., Inc., 22 Union Ave., Rutherford, N. J.
Electromode Div. of Commercial Controls Corp., 570 Culver Rd., Rochester 3, N. Y.
Electronics Corp. of America, 1 Memorial Dr., Cambridge 42, Mass.
Electro-Ray Mfg. Co., Inc., 8310 N. E. Highway 99, Vancouver, Wash.
Electro Rust-Proofing Corp., 30 Main St., Belleville, N. J.
Electro-Switch & Controls Inc., 5755 Camille Ave., Culver City, Calif.
Electro Temp Corp., 130 Maple St., Springfield 5, Mass.
Electro-Therm, Inc., 931 Selim Rd., Silver Spring, Md.
Electrovector, Inc., 475 Flushing Ave., Brooklyn 5, N. Y.
Electrovent Fan & Mfg. Co., 812 W. Lake St., Chicago 7, Ill.
Elgen Mfg. Co., 32-49 Gale Ave., Long Island City 1, N. Y.
Elgin Softener Corp., Elgin, Ill.
Elgo Shutter & Mfg. Co., 2738 W. Warren Ave., Detroit 8, Mich.
Elizabeth Div. of Elastic Stop Nut Corp. of America, 1027 Newark Ave., Elizabeth 3, N. J.
Elkhart Products Corp., 1255 Oak St., Elkhart, Ind.
Elliott Co., Jeannette, Pa.
Ellicott Fabricators, Inc., 1700 Ridgely St., Baltimore 30, Md.
Ellis & Ford Mfg. Co., P. O. Box 308, Birmingham, Mich.
Ellis & Watts Products, Inc., P. O. Box 33, Cincinnati 36, O.
Ellison Draft Gage Co., 548 W. Monroe St., Chicago, Ill.
El-Tronics, Inc., 1420 Walnut St., Philadelphia 2, Pa.
Embassy Steel Products, Inc., 890 Stanley Ave., Brooklyn 8, N. Y.
Emco Pneumatic Corp., 1317 Locust St., Des Moines, Ia.
Emerson Electric Mfg. Co., The, 8100 Florissant Ave., St. Louis 36, Mo.
Emerson Radio & Phono Corp., 14th & Coles St., Jersey City 2, N. J.
Emglo Corp.. Dupont St., Johnstown, Pa.
Emjay Maintenance Engineers, 327 Union Ave., Rutherford, N. J.
Empire Chemical Products Co., 10 Longworth St., Newark 2, N. J.
Empire Ventilation Equipment Co., 35-39 Vernon Blvd., Long Island City, N. Y.
Enderle, Inc., Ltd., Frank X., 1715 San Fernando Rd., Los Angeles 65, Calif.
Engelhard Industries, Inc., Instruments & Systems Div., 850 Passaic Ave., East Newark, N. J.

Engelhard Industries, Inc., 113 Astor St., Newark 2, N. J.
Engesser & Co., William L., 9745 East Rush St., El Monte, Calif.
Engine & Material Handling Div., Allis-Chalmers Mfg. Co., Harvey, Ill.
Engineer Co., 75 West St., New York 6, N. Y.
Engwald Corp., The, 125 Sheridan Blvd., Inwood, Long Island, N. Y.
Enjay Co., 15 W. 51st St., New York, N. Y.
Enterprise Div., General Motors Corp., 1444 Washington Ave., Huntington, W. Va.
Epco Sales, Inc., 3204 Sackett Ave., Cleveland 9, O.
EPIC, Inc., 150 Nassau St., New York 38, N. Y.
Equipco, Inc., 1238 N.W. Glisan, Portland 9, Ore.
Erdle Perforating Co., 171 York St., Rochester 11, N. Y.
Ergolyte Mfg. Co., 3627 Lawrence St., N., Philadelphia 40, Pa.
Erie Bolt & Nut Co., Erie, Pa.
Erie City Iron Wks., 1450 East Ave., Erie, Pa.
Erie Tool Wks., 735 W. 12th St., Erie, Pa.
Erlen Products Co., 700 S. Flower St., Burbank, Calif.
Ernst Water Column & Gauge Co., Livingston, N. J.
Ervite Corp., 4000 W. Ridge Rd., Erie, Pa.
Esco Corp., 2141 N. W. 25th Ave., Portland 10, Ore.
Essex Wire Corp., 1601 Wall Street, Ft. Wayne 6, Ind.
Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles 21, Calif
Esso Standard Div., Humble Oil & Refining Co., 15 W. 51st St., New York, N. Y.
Eutectic Welding Alloys Corp., 40-40 172 St., Flushing 58, N. Y
Evanite Plastic Co., Div. of the Evans Pipe Co., Uhrichsville, O.
Evans Co., Robert G., 6020 Troost Ave., Kansas City 10, Mo.
Evans Corp., The George, River Drive at 37th St., Moline, Ill.
Evans Machine Co., Inc., 122 S. Calverton Rd., Baltimore, Md.
Eveready Briksaw Co., 1104 Union Ave., Kansas City 1, Mo.
Everhot Heater Div., Temprite Products, Inc., Birmingham, Mich
Everite Pump & Mfg. Corp., W. Roseville Rd., Lancaster, Pa.
Everlasting Valve Co., 49 Fisk St., Jersey City 5, N. J.
Everwarm, Inc., 3600 Pleasant Ridge Road, Knoxville, Tenn.
Evis Mfg. Co., 5955 N. Rockwell St., Chicago 45, Ill.
Ewing Mfg. Co., 2545 N. W. 10th St., Oklahoma City, Okla.
Excelsior Leather Washer Mfg. Co., 720-730 Chestnut St., Rockford, Ill.
Excelsior Steel Furnace Co., The, 546 W. Washington Blvd., Chicago
Excelsior Tool & Machine Co., 31st & Ridge Ave., East St. Louis, Ill.
Exit-Aire Co., 13650 Vaughn St., Pacoima, Calif.
Extremultus, Inc., 25-11 40 Ave., Long Island City 1, N. Y.
Extruded Plastics, Inc., New Canaan Ave., Norwalk, Conn.

F

Faber Engineering Co., Inc., 240 W. Washington St., Norristown, Pa.
Fabreeka Products Co., Inc., 1190 Adams St., Boston 24, Mass.
Fabri-Valve Co. of America, 91 N. E. Russell St., Portland, Ore.
Fafnir Bearing Co., The, 37 Booth St., New Britain, Conn.
Fairbanks Co., The, 393 Lafayette St., New York 3, N. Y.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
Fairchild Camera & Instrument Corp. of Syosset, Long Island, N. Y.
Fairmont Aluminum Co., Fairmont, W. Va.
Fairmount Tool & Forging, Inc., 10611 Quincy Ave., Cleveland 6, O.
Falcon Equipment Co., 13th St., New Brighton, Pa.
Falk Corp., Box 492, Milwaukee 1, Wis.
Falls Industries, Inc., 31915 Aurora Rd., Solon, O.
Falstrom Co., 26 Falstrom Court, Passaic, N. J.
Famco Machine Co., 3114 Sheridan Rd., Kenosha, Wis.
Fanner Mfg. Co., The, Brookside Park, Cleveland 9, O.
Farr Company, P. O. Box 90187, Airport Station, Los Angeles 45, Calif.
Farrell Associates, Charles, Valencia, Pa.
Farris Engineering Corp., 405 Commercial Ave., Palisades Park, N J
Farris Flexible Valve Corp., 400 Commercial Ave., Palisades Park, N. J.
Fasco Industries, Inc., P. O. Box 509, Rochester 2, N. Y.
Fastening Devices, Inc., 369 50th St., Brooklyn, N. Y.
Fastway Fasteners, Inc., 2157 East 28th St., Lorain, O.
Fedders Corp., Heating Div., P. O. Box 1690, Trenton 7, N. J.
Fedders Corp., 57 Tonawanda St., Buffalo 7, N. Y.
Federal Boiler Co., Inc., Granite and West Sts., Midland Park, N. J.
Federal Laboratories, Inc., Dept. 7-C, Saltsburg, Pa.
Federal-Mogul Div., Federal-Mogul-Bower Bearings, Inc., 11031 Shoemaker St., Detroit 13, Mich.
Federal Pump Corp., 1144 Utica Ave., Brooklyn 3, N. Y.
Federal Seaboard Terra Cotta Corp., 10 E. 40th St., New York 16, N. Y.
Fee & Mason Mfg. Co., Inc., Manasquan, N. J.
Felt Products Mfg. Co., 7450 No. McCormick Blvd., Skokie, Ill.
Felters Company, The, 210 South St., Boston 11, Mass.
Fen-Thread-Machine Co., Inc., The, 3107 N. Broad St., Philadelphia, Pa.
Fenwal Inc., Pleasant St., Ashland, Mass.
Fenway Machine Co., 1910 N. Marshall St., Philadelphia 22, Pa.
Fern, Ralph, 1007 Fisk St., Scranton 9, Pa.
Ferro Corp., 4150 East 56th St., Cleveland 5, O.
Fibercast Co., P. O. Box 727, Sand Spring, Okla.
Fibrous Glass Products, Inc., A Subsid. of Pall Corp., Alpa Plaza, Hicksville, N. Y.
Fibrous Products Div., Union Asbestos & Rubber Co., 1111 W. Perry St., Bloomington, Ill.
Field Control Div., Conco Engineering Works, Inc., Mendota, Ill.
Fiese & Firstenberger Mfg., Inc., 2494 Railroad Ave., Fresno, Calif.
Filt-R-Ite Co., 1408 W. Harrison St., Chicago 7, Ill.
Filtrine Mfg. Co., Inc., 63 Wanamaker Ave., Waldwick, N. J.
Fine Products Co., 6240 Ogden, Berwyn, Ill.
Finn & Company, Inc., T. R., 200 Central Ave., Hawthorne, N. J.
Finnigan & Co., Inc., J. J., P. O. Box 2344, Sta. "D", Atlanta 18, Ga.
Fischer & Porter Co, 600 Warminster Rd., Warminster, Pa.
Fisher Governor Co., P. O. Box 307, Marshalltown, Ia.
Fisher Research Laboratory, Inc., 1961 University Ave., Palo Alto, Calif.
Fiske Co., 1237 W. 47th St., Chicago 9, Ill.
Fitzgibbons Boiler Co., Inc., 101 Park Ave., New York 17, N. Y.
Flagg & Co., Inc., Stanley G., #3 Penn Center Plaza, Philadelphia 2, Pa.
Flanders Filters, Inc., P. O. Box 718, Riverhead, Long Island, N. Y.
Flemm Lead Co., Inc., Bradley Ave. & School St., Long Island City, 1, N. Y.
Flexaust Co., 100 Park Ave., New York 17, N. Y.
Flexible Metal Hose Mfg. Co., 777 West 16th St., Costa Mesa, Calif..
Flexible Tubing Corp., Guilford, Conn.
Flexo Supply Co., Inc., 4649 Page Blvd., St. Louis 13, Mo.
Flexonics Corp., Subsid. of Calumet & Hecla, Inc., 290 E. Devon Rd., Bartlett, Ill.
Flexrock Co., 36 & Filbert Sts., Philadelphia 4, Pa.
Flintkote Co., The, 30 Rockefeller Plaza, New York 20, N. Y.
Flodar Corp., 16911 St. Clair, Cleveland 10, O.
Flood Co., Hudson, O.
Floridin Co., P. O. Box 989, Tallahassee, Fla.
Flow Actuated Control Co., Inc., 15 Park Row, New York 38, N. Y.
Flow Corp., 85 Mystic St., Arlington 74, Mass.
Flowline Corp., New Castle, Pa.
Fluid Systems, Inc., 1881 Dixwell Ave., New Haven 14, Conn.
Fluor Products Co., P. O. Box 1267, Santa Rosa, Calif.
Flynn & Emrich Co., 301 Holliday St., Baltimore 2, Md.
Flynn Mfg. Co., Michael, 700 East Godfrey Ave., Philadelphia 24, Pa.
Foamade Industries, 14851 - 11 Mile Rd., Oak Park 37, Mich.
Forest-Wool Insulation Co., Inc., 215 No. Linden, Marshall, Mich.
Formica Corp., The, 4614 Spring Ave., Cincinnati, O.
Forney Engineering Co., 2705 Hawes St., Dallas 9, Tex.
Forseille Products, Inc., P. O. Box 6755, Baltimore, Md.
Ft. Worth Steel & Machinery Co., P. O. Box 1038, Ft. Worth, Tex.
Forty-Eight Insulations, Inc., P. O. Box 472, Aurora, Ill.
Foster Co., Benjamin. 4636 W. Girard Ave., Philadelphia 31, Pa.
Foster Engineering Div., General Controls Co., Warwick Industrial Park, Warwick, R. I.
Foster Pump Wks., Inc., 46-A Washington St., Brooklyn 1, N. Y.
Foster Wheeler Corp., 666 Fifth Ave., New York 19, N. Y.
Foxboro Co., 106 Neponset Ave., Foxboro, Mass.
Fram Corp., Providence 16, R. I.
Fram Aire Corp., Div. of Fram Corp., Providence 16, R. I.
France Refractories Co., J. H., 1921 France Rd., Snow Shoe, Pa.
Frankell Mfg. Co., Inc., 862 Newark Ave., Jersey City 6, N. J.
Franklin Dales Co., 180-184 E. Mill St., Akron 8, O.
Franklin Electric Co., Inc., 400 E. Spring St., Bluffton, Ind.
Franklin Plastics, Inc., Franklin, Pa.
Fraser & Johnston Co., 1900 17th St., San Francisco, Calif.
Frasse & Co., Inc., Peter A., 17 Grand St., New York 13, N. Y.
Frederick Iron & Steel Inc., E. 7th St., Frederick, Md.
Freeman Heating Div., Illinois Iron & Bolt Co., Carpentersville, Ill.
Fresh'nd-Aire Co., Div. of Cory Corp., 3200 W. Peterson, Chicago 45, Ill.
Fretz-Moon Tube Co., Inc., P. O. Box 551, Butler, Pa.
Frick Co., Waynesboro, Pa.
Fricke, Fred J., 4404 Avenida Estrellita, Albuquerque, N. M.
Friedrich Refrigerators, Inc., 1117 E. Commerce, San Antonio, Tex.
Friermood Machine Works, Converse, Ind.
Friez Instrument Div., The Bendix Corp., 1400 Taylor Ave., Baltimore 4, Md.
Frigid, Inc., 1250 Rockaway Ave., Brooklyn, N. Y.
Frigidaire Div., General Motors Corp., Dayton 1, O
Frigid Coil, Inc., 9800 E. Rush St., El Monte, Calif.
Frigikar Corp., 10858 Harry Hines Blvd., Dallas, Tex.
Frontier Bronze Corp., Packard Rd., Niagara Falls, N. Y.
Fuelguard Co., 5643 Dyer St., Dallas 6, Tex.
Fuel Watchman, 77-29 138th St., Flushing 67, N. Y.
Fulflo Specialties Co., Inc., The, Blanchester, O.
Fuller Co., 124 Bridge St., Catasauqua, Pa.
Fuller Co., D. William, 2320 E. 75th St., Chicago 49, Ill.
Fuller Co., H. B., 255 Eagle St., St. Paul 2, Minn.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Box 400, Knoxville 1, Tenn
Furnas Electric Co., 1041 McKee St., Batavia, Ill.
Fyr-Fyter Co., 221 Crane St., Dayton 1, O.

G

G. M. Mfg. Co., 134 W. 26th St., New York, N. Y.
G & O Mfg. Co., 138 Winchester Ave., New Haven 8, Conn.
GPE Controls, Inc., 240 E. Ontario St., Chicago 11, Ill.
Gabriel Boiler Co., 1428 N.W. 14th Ave., Portland, Ore.
Gaffers & Sattler, 8111 W. Beverly Blvd., Los Angeles 48, Calif.
Gallaher Co., The, 4108 Dodge St., Omaha 3, Neb.
Galloway Co., G. W., 220 So. First Ave., Arcadia, Calif.
Gamon Meter Div., Worthington Corp., 296 South St., Newark, N. J.
Gannon Co., Russell R., 5535 Vine St., Cincinnati 16, O.
Garden City Fan & Blower Co., 801 N. Eighth St., Niles, Mich.
Garden City Instruments, Inc., 931 Sherman Ave., Evanston, Ill.
Gardiner Electronics Co., 2545 E. Indian School Rd., Phoenix, Ariz.
Gardiner Metal Co., 4820 So. Campbell Ave., Chicago 32, Ill.
Gardner-Denver Co., Quincy, Ill.
Garlock, Inc., 402 Main St., Palmyra, N. Y.
Garman Co., Inc., The, 1253 Grover Rd., St. Louis 25, Mo.
Gas Machinery Co., 16100 Waterloo Rd., Cleveland 10, O.
Gas & Oil Industry Laboratories, Inc., 4 Paine Ave., Irvington, N. J.
Gasoilair Equipment Co., P. O. Box 768, New Haven, Conn.
Gates Engineering Co., 100 S. West St., Wilmington 99, Del.
Gates Rubber Co., The, 999 S. Broadway, Denver 17, Colo.
Gateway Engineering Co., 3233 W. Grand Ave., Chicago, Ill.

Gatke Corp., 228 N. LaSalle St., Chicago 1, Ill.
Gato Valve Co., 912-916 Behan St., Pittsburgh 33, Pa.
Gavitt Wire & Cable Co., Div. of Amerace Corp., 100 Central St., Brookfield, Mass.
Gelber & Sons, Inc., S., 5806 N. Lincoln Ave., Chicago 45, Ill.
Gelman Instrument Co., 106 N. Main, Chelsea, Mich.
Gel-Me Co., P. O. Box 293, Bloomington, Ill.
Gem Clay Forming Co., P. O. Box 500, Sebring, O.
General Air Conditioning Corp., 4542 E. Dunham St., Los Angeles.
General Air Products Corp., 14-40 Factory St., Cedar Grove, N. J.
General Alliance Corp., 2105 Moore St., San Diego 1, Calif.
General Aluminum Supply Co., 1506 Eastern Ave., Kansas City 26, Mo.
General-American Valve Co., P. O. Box 444, Corona Del Mar, Calif.
General Automatic Products Corp., 2300 Sinclair Lane, Baltimore 13, Md.
General Blower Co., Subsid. Ilg Electric Ventilating Co., 8610 Ferris Ave., Morton Grove, Ill.
General Blower Co., 6412 Girard Ave., Philadelphia 31, Pa.
General Ceramics Div. of Indiana Corp., Crows Mill Road, Keasbey, N. J.
General Chemical Div., Allied Chemical Corp., 40 Rector St., New York, N. Y.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
General Dynamics Corp., Liquid Carbonic Div., 135 S. LaSalle St., Chicago 3, Ill.
General Electric Co., One Progress Rd., Shelbyville, Ind.
General Electric Co., Air Conditioning Dept., Tyler, Texas.
General Electric Co., Apparatus Sales Div., 1 River Rd., Schenectady 5, N. Y.
General Electric Co., Appliance Control Dept., Morrison, Ill.
General Electric Co., Capacitor Dept., Ft. Edward, N. Y.
General Electric Co., Chemical Materials Dept., 1 Plastics Ave., Pittsfield, Mass.
General Electric Co., Construction Materials Sales Operation, 1285 Boston Ave., Bridgeport 2, Conn.
General Electric Co., Distribution Unit, 90 Whiting St., Plainville, Conn.
General Electric Co., Laminated Products Dept., Coshocton, O.
General Electric Co., Large Lamp Dept., Nela Park, Cleveland 12, O.
General Electric Co., Room Air Conditioner Dept., Major Appliance Div., Appliance Park, Louisville 1, Ky.
General Electric Co., Small Steam Turbine Dept., 166 Broad St., Fitchburg, Mass.
General Electric Co., Wiring Device Dept., Electric Comfort Heating Section, Bldg. 6, 232 Appliance Park, Louisville, Ky.
General Electric Co., X-Ray Dept., 4855 W. Electric Ave., Milwaukee, Wis.
General Filter Co., 923 Second St., Ames, Ia.
General Filters, Inc., 43800 Grand River, Novi, Mich.
General Fittings Co., P. O. Box 151, East Greenwich, R. I.
General Heating Products Co., 7426 State Rd., Philadelphia 36, Pa.
General Kinetics Corp., 197 S. Van Brunt St., Englewood, N. J.
General Machine & Mfg. Co., Blair St. & Spring Garden Ave., Berwick, Pa.
General Metals Corp., Adel Div., 1444 Washington Ave., Huntington, West Va.
General Metals, Inc., 858 Goldsboro St., P. O. Box 448, Greensboro, N. C.
General Plate Div., Metals & Controls Corp., 34 Forest St., Attleboro, Mass.
General Products Co., Inc., Fredericksburg. Va.
General Rubber Corp., Summit & Atwood St., Tenafly, N. J.
General Scientific Equipment Co., Limekiln Pike & Williams Ave., Philadelphia 50, Pa.
General Sound Control, Inc., 11810 Center St., Hollydale, Calif.
General Thermoelectric Corp., Box 253, Princeton, N. J.
General Tire & Rubber Co., 444 Tacoma Ave., Logansport, Ind.
General Tire & Rubber Co., 1708 Englewood, Akron, O.
General Tire & Rubber Co., Industrial Products Div., Wabash, Ind.
Geneva Mfg. Co., N. Woodbury Rd., South Elgin, Ill.
Genie-Air, P. O. Box 39691, Los Angeles 39, Calif.
Geo-Drill Co., P. O. Box No. 6, Bridgeville, Pa.
Gerett Corp., M. A., 724 W. Winnebago St., Milwaukee 5, Wis.
Germatrol Corp., 7025 Chaucer St., Pittsburgh 8, Pa.
Gerrard & Co., A. J., 400 E. Touhy Ave., Des Plaines, Ill.
Gerry Tool Co., Inc., 2368 Hoffman St., Bronx 58, N. Y.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Giant Mfg. Co., 6th St. & 12th Ave., Council Bluffs, Ia.
Gibraltar Corp. of America, 223 N. 9th St., Brooklyn, N. Y.
Gibson-Homans Co., 2366 Woodhill Rd., Cleveland 6, O.
Gibson Refrigerator Co., Greenville, Mich.
Gilbert & Barker Mfg. Co., West Springfield, Mass.
Gilbert Brass Foundry Co., 5028 Farlin St., St. Louis, Mo.
Gilbreth Co., The, 1211 Chestnut St., Philadelphia 7, Pa.
Gisholt Machine Co., 1253 E. Washington Ave., Madison 10, Wis.
Glidden Co., The, 900 Union Commerce Blvd., Cleveland 14, O.
Glidden Co., Midwest Industrial Div., 1857 N. LeClaire, Chicago 39, Ill.
Globe Products, Huppower Div., Hupp Corp., 7450 Melville Ave., Detroit 17, Mich.
Glo-Brite Products, Inc., 6415 N. California Ave., Chicago 45, Ill.
Goder, Inc., Joseph, 4241 N. Honore St., Chicago 13, Ill.
Goethel Sheet Metal Wks., Inc., Alfred, 3218 W. Fond du Lac Ave., Milwaukee 10, Wis.
Goldak Co., Inc., The, 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Golden Anderson Valve Specialty Co., 1232 Ridge Ave., Pittsburgh 33.
Goldens' Foundry & Machine Co., Columbus, Ga.
Gold Top Heating, Inc., 330 Del Mar Pl., P. O. Box 2, San Gabriel, Calif.
Goodall Rubber Co., 441 Whitehead Rd., Trenton, N. J.
Goodfellow Co., Inc., E. D., 496 E. Bodley Ave., Memphis, Tenn.
Goodrich Co., B. F., Shelton, Conn.
Goodrich Chemical Co., B. F., 3135 Euclid Ave., Cleveland 15, O.
Goodrich Industrial Products Co., B. F., Akron, O.
Goodrich Industrial Products Co., B. F., Koroseal Div., Marietta, O.
Goodyear Pumps, Inc., 9 Rockefeller Plaza, New York, N. Y.
Goodyear Tire & Rubber Co., 1144 E. Market St., Akron 16, O.
Goodwill Mfg. Co., 1213 S. Laramie, Chicago 50, Ill.
Gordon & Piatt, Inc., P. O. Box 914, Winfield, Kan.
Gorman-Rupp Co., 305 Bowman St., Mansfield, O.
Gorrell & Gorrell, 336 Old Hook Rd., Westwood, N. J.
Gorton Heating Corp., Cranford, N. J.
Goss Gas Inc., P. O. Box 57, Glenshaw, Pa.
Gotham Refining Chemical Co., 475 Fifth Ave., New York 17, N. Y.
Gould Co., J. D., 4707 Massachusetts Ave., Indianapolis 18, Ind.
Goulds Pumps, Inc., Fall St., Seneca Falls, N. Y.
Governair Corp., 4840 North Sewell, Oklahoma City 4, Okla.
Governale Bros., Inc., 5518 Ave., N., Brooklyn, N. Y.
Grabler Mfg. Co., 6565 Broadway, Cleveland 5, O.
Grace & Co., W. R., Davison Chemical Div., 101 N. Charles St., Baltimore 3, Md.
Graham Mfg. Co., Inc., 170 Great Neck Rd., Great Neck, Long Island, N. Y.
Graham Transmissions, Inc., Menomonee Falls, Wis.
Granberg Corp., Subsid. of American Meter Co., Inc., 1308 67th St., Oakland 8, Calif.
Granco Steel Products Co., 6506 N. Broadway, St. Louis 15, Mo.
Granite City Steel Co., 20th & State Sts., Granite City, Ill.
Grant Wilson, Inc., 141 W. Jackson Blvd., Suite 1560, Chicago, Ill.
Graphic Calculator Co., 633 Plymouth Ct., Chicago 5, Ill.
Graphic Indicator Co., 1739 S. La Cienega Blvd., Los Angeles 35, Calif.
Graton & Knight Co., 356 Franklin St., Worcester 4, Mass.
Graver Water Conditioning Co., 216 W. 14th St., New York 11, N. Y.
Gray Co., Inc., 56 - 11th Ave., N. E., Minneapolis 13, Minn.
Gray Pantograph Engraving Co., 200 Washington St., Hoboken, N. J.
Gray Tool Co., P. O. Box 2291, Houston, Tex.
Great Northern Mfg. Corp., 1056 N. Wood St., Chicago 22, Ill.
Great Western Steel Co., 2300 West 58th, Chicago 36, Ill.
Green Fire Brick Co., A. P., Mexico, Mo.
Green Fuel Economizer Co., Inc., The, 780 Main St., Beacon 3, N. Y.
Green Instrument Co., Inc., 385 Putnam Ave., Cambridge 39, Mass.
Green Instruments, Inc., Henry J., 2500 Shames Dr., Westbury, N. Y.
Greene, Tweed & Co., North Wales, Pa.
Greenfield Tap & Die Div. of United Greenfield Corp., Sanderson St., Greenfield, Mass.
Greenheck Fan & Ventilator Corp., Schofield, Wis.
Greenlee Tool Co., Div. of Greenlee Bros. & Co., 2136 12th St., Rockford, Ill.
Greenville Tubes, Inc., P. O. Box 30, Greenville, Pa.
Greenwood Valve Div. of Vernon Tool Co., Ltd., 1101 Meridian Ave., Alhambra, Calif.
Greer Hydraulics, Inc., 5930 W. Jefferson Blvd., Los Angeles, Calif.
Griffin & Co., 500 Bergman Ave., Louisville 8, Ky.
Griffin Pipe Div., Griffin Wheel Co., 2601 9th Ave., Council Bluffs, Ia.
Grinnell Co., Inc., 260 W. Exchange St., Providence 1, R. I.
Griphoist, Inc., 744 Harrison St., San Francisco 7, Calif.
Grip Nut Co., South Whitley, Ind.
Griscom-Russell Co., The, Massillon, O.
Gross-Aire Mfg. Co., 9416 W. Milton Ave., Overland 14, Mo.
Grove Valve and Regulator Co., 6529 Hollis St., Oakland, Calif.
Guard Coatings Corp., 8-05 43rd Ave., Long Island City 1, N. Y.
Guardian Electric Mfg. Co., 1621 W. Walnut St., Chicago 12, Ill.
Guardian Products Corp., 1215 E. 2nd St., Michigan City, Ind.
Gulf Oil Corp., Dept. DM, P. O. Box 2140, Houston 1, Tex.
Gustin-Bacon Mfg. Co., 210 W. 10th St., Kansas City 6, Mo.

H

H. A. Mfg. Co., 1612 W. King St., York, Pa.
H-B Instrument Co., American & Bristol Sts., Philadelphia 40, Pa.
H & H Tube & Mfg. Co., 245-275 N. Forman Ave., Detroit 17, Mich.
H & M Pipe Beveling Machine Co., 311 East 3rd, Tulsa, Okla.
H-P Products, Inc., 514 W. Gorgas St., Louisville, O.
H T Boiler Feeder Co., P. O. Box 362, Phoenixville, Pa.
Hadley Products Co., Inc., Marietta, O.
Haertel Co., Walter, 2840 4th Ave., S., Minneapolis 8, Minn.
Hagan Chemicals & Controls, Inc., Rt. 60 at Campbell's Run Rd., P. O Box 1346, Pittsburgh 30, Pa.
Hager & Son, Inc., 510 Buckbee St., Rockford, Ill.
Hague & Co., Inc., Alfred, Div. of Lacquer & Chemical Corp., 214 40th St., Brooklyn 32 N. Y.
Hall Co., P. O. Box 425, Windsor Locks, Conn.
Hall Laboratories, Hagan Bldg., Pittsburgh 30, Pa.
Haloid Zero, Inc., P. O. Box 1540, Rochester 3, N. Y.
Halsey Distributors, Box 102, Wilton, Conn.
Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.
Hamburg Boiler Wks., Inc., Grand St., Hamburg, Pa.
Hamer-Dril Co., 512 Greenwich St., New York 13, N. Y.
Hamer Valves Inc., 2919 Gardenia Ave., Box 1851, Long Beach 1, Calif.
Hamilton Div., Baldwin-Lima-Hamilton Corp., Hamilton, O.
Hamilton Fan & Blower Co., Inc., 2650 Colerin Ave., Cincinnati, O.
Hamilton Kent Mfg. Co., 427 West Grant St., Kent, O.
Hamlin Co., Inc., J. F., 746 Ellis St., San Francisco 9, Calif.
Hammel-Dahl Div., General Controls Co., Warwick Industrial Park, Warwick, R. I.
Hammett Co., 2311 Tauromee Ave., Kansas City 2, Kans.
Hammond Machinery Builders, Inc., 1600 Douglas, Kalamazoo, Mich.
Hammond Valve Corp., 1844 Summer Blvd., Hammond, Ind.

Hampton-Cross Co., The, 120 S. 10th St., Louisville 2, Ky.
Handy Angle Div., The Lugall Co., Haverford, Pa.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Haney Burner Div., Southwest Gas Corp., Box 271, Las Vegas, Nev.
Hankison Corp., College & Pike, Canonsburg, Pa.
Hanna Engineering Wks., 1767 N. Elston, Chicago 22, Ill.
Hannifin Co., A Div. of Parker-Hannifin Corp., 501 S. Wolf, DesPlaines, Ill.
Hanovia Lamp Div., Engelhard Hanovia, Inc., 100 Chestnut St., Newark 5, N. J.
Hansen Mfg. Co., Inc., Princeton 15, Ind.
Hanson Equipment Co., 301 Charles St., Beloit, Wis.
Hansson, Inc., Elof, Acoustical Div., 711 3rd Ave., New York 17, N. Y
Harco Corp., Cathodic Protection Div., 4600 E. 71st St., Cleveland 25.
Hardinge Oil Burner & Mfg. Co., 1770 Berteau St., Chicago 13, Ill.
Harman Equipment Co., 3605 East Olympic Blvd., Los Angeles 23, Calif.
Harnischfeger Corp., 4400 W. National Ave., Milwaukee 46, Wis.
Harold Electric Co., 210 E. Alder, Walla Walla, Wash.
Harper Co., H. M., 8388 Lehigh Ave., Morton Grove, Ill.
Harrington & King Perforating Co., Inc., 5655 Fillmore St., Chicago 44, Ill.
Harris Calorific Co., The, 5501 Cass Ave., N. W., Cleveland 2, O.
Harris & Co., Arthur, 210 N. Aberdeen St., Chicago 7, Ill.
Harrisburg Steel Co., Div. of Harsco Corp., 10th & Herr Sts., Harrisburg, Pa.
Harrison Radiator Div., General Motors, Lockport, N. Y.
Harrison Sheet Steel Co., 4718 W. 5th St., Chicago 44, Ill.
Harrison Steel Corp., 200 Greenpoint Ave., Brooklyn 22, N. Y.
Hart & Cooley Mfg. Co., Holland, Mich.
Hart Mfg. Co., The, 116 Bartholomew Ave., Hartford 1, Conn.
Hartell, Inc., 60 York Rd., Warminster, Pa.
Hartmann Co., Chas., 985 Dean St., Brooklyn 38, N. Y.
Hartzell Propeller Fan Co., P. O. Box 909, Roosevelt Ave., Piqua, O.
Harvey Aluminum, 19200 S. Western Ave., Torrance, Calif.
Haskel Engineering & Supply Co., 1236 S. Central Ave., Glendale, Calif.
Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
Hastings Air Control, Inc., 3215 Leavenworth St., Omaha, Nebr.
Hastings-Raydist, Inc., Hampton, Va.
Hauck Mfg. Co., 126-136 10th St., Brooklyn 15, N. Y.
Haveg Industries, Inc., 900 Greenbank Rd., Wilmington 8, Del.
Havens Cooling Tower, Div. of Havens Structural Steel Co., 1713 Crystal Ave., Kansas City, Mo.
Haydon Co., A. W., The, 258 N. Elm, Waterbury, Conn.
Haydon Div., General Time Corp., 245 E. Elm St., Torrington, Conn.
Hayes Furnace Mfg. & Supply Co., 1942 Artesia Blvd., Torrance, Calif.
Haynes Stellite Co., Div. of Union Carbide Corp., 1020 W. Park Ave., Kokomo, Ind.
Hays Corp., The, 800 E. 8th St., Michigan City 14, Ind.
Hays Mfg. Co., 801 W. 12th St., Erie, Pa.
Healey Co., Lee, 554 W. Garfield, Glendale 4, Calif.
Healy Ruff Co., 2257 University Ave., St. Paul 14, Minn.
Heat Controllers, Inc., Losey at Wellworth, Jackson, Mich.
Heat-Exchangers, Inc., 2003 W. Fulton St., Chicago, Ill.
Heating Assurance, Inc., 124 E. Augusta St., Spokane 21, Wash.
Heatmore, Inc., 651-5 Driggs Ave., Brooklyn 11, N. Y.
Heat & Power Corp., 424 E. Saratoga St., Baltimore 2, Md.
Heat-Timer Corp., 657 Broadway, New York 12, N. Y.
Heat Transfer Products, Inc., Park Ave., Perkasie, Pa.
Heat Transmission Conduit Co., 2300 Payne Ave., Rm. 503, Cleveland 14, O.
Heatron, Inc., 333 Eberts Lane, York, Pa.
Heatube Dept., Albion Div., McGraw-Edison Co., Albion, Mich.
Heat-X, Inc., Subsidiary of Dunham-Bush, Inc., Brewster, N. Y.
Heil Process Equipment Corp., 12901 Elmwood Ave., Cleveland 11.
Hein-Werner Corp., 1200 National Ave., Waukesha, Wis.
Heinemann Electric Co., 497 Plum St., Trenton 2, N. J.
Helicoid Gage Div., American Chain & Cable Co., Inc., Bridgeport 2, Conn.
Heller Laboratories, Inc., 124 Fort Lee Rd., Leonia, N. J.
Helmco, Inc., 7400 W. Lawrence Ave., Chicago 31, Ill.
Henderer's Sons, A. L., 689 Maryland Ave., Wilmington 99, Del.
Hendley & Whittemore, 6 Blackhawk Blvd., Beloit, Wis.
Hendrick Mfg. Co., 37 Dundaff St., Carbondale, Pa.
Henry Furnace Co., The, Medina, O.
Henry Valve Co., 3215 North Ave., Melrose Park, Ill.
Henszey Co., 202½ N. Water St., Watertown, Wis.
Hercules Chemical Co., Inc., 416 Broadway, New York 13, N. Y.
Hercules Powder Co., Wilmington, Del.
Hercules Power Equipment Co., P. O. Box 49724, Barrington Station, Los Angeles 49, Calif.
Heresite & Chemical Co., Manitowoc, Wis.
Herman Nelson Products, American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.
Herman, Shepard, P. O. Box 23, Newton Upper Falls, Mass.
HERRmidifier Co., 1810 Hempstead Rd., Lancaster, Pa.
Hersey-Sparling Meter Co., 250 Elm St., Dedham, Mass.
Hershey Motorstokor, Manheim, Pa.
Hertner Electric Co., The, 12690 Elmwood Ave., Cleveland 11, O.
Hetherington & Berner Inc., 701 Kentucky Ave., Indianapolis 7, Ind.
Hewitt-Robins Inc., 666 Glenbrook Rd., Stamford, Conn.
Hexdall Co., A. M., Morris, Ill.
Highside Chemicals, Inc., 10-14 Colfax Ave., Clifton, N. J.
Hi-Grade Alloy Corp., 3034 E. 95th St., Chicago 17, Ill.
Hild Floor Machine Co., Inc., 1217 W. Washington Blvd., Chicago 7, Ill.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Hill Hubbell Co., 3091 Mayfield Rd., Cleveland 18, O.
Hill, Inc., Walter P., 22183 Telegraph Rd., Detroit 19, Mich.
Hill Machine Co., 1301 Eddy Ave., Rockford, Ill.
Hill Pump Valve Co., 2728 N. Elston Ave., Chicago, Ill.
Hilliard Corp., 100 W. 4th St., Elmira, N. Y.
Hills-McCanna Co., 4600 W. Touhy Ave., Chicago 46, Ill.
Hi-Lo Mfg. Co., 2853 Columbus Ave., Minneapolis, Minn.
Hilo Varnish Corp., Div. of Carpenter-Morton Co., 376 Third St., Everett 49, Mass.
Hiltl, Inc., Rapid Fastening Systems, 73 Southfield Ave., Stamford, Conn.
Hinde & Dauch Div., West Virginia Pulp & Paper Co., P. O. Box 861, Sandusky, O.
Hindle Transformer Co., Inc., Woods Church Rd., Flemington, N. J.
HI-PRESS Air Conditioning of America, Inc., 405 Lexington Ave., Chrysler Bldg., New York 17, N. Y.
Hirschman-Pohle Co., Inc., 12 Lent Ave., LeRoy, N. Y.
Hite Mfg. Co., N. E., 303 North Elizabeth St., Chicago 7, Ill
Hitemp Wires, Inc., 1200 Shames Dr., Westbury, N. Y.
Hobart Bros. Co., Hobart Square, Troy 1, O.
Hobbs Div., Stewart-Warner Corp., Springfield, Ill.
Hodge Boiler Wks., 99-111 Sumner St., East Boston 28, Mass.
Hodgman Mfg. Co., Inc., 135 Washington St., Taunton, Mass.
Hoff Mfg. Co., Johnson Rd., Bethany, New Haven 15, Conn.
Hoffacker Machine Tool Co., 1140 Pontiac Ave., Cranston 10, R. I.
Hoffman Combustion Engrg. Co., 1780 Southfield Rd., Lincoln Park, Mich.
Hoffman Specialty Mfg. Corp., 1700 W. 10th St., Indianapolis 7, Ind.
Hoffman Valves, 2360 W. Dorothy Lane, Dayton 39, O.
Hofmann Engineering Co., 4022 W. 55th St., Chicago 32, Ill.
Hogart Engineering Co., 1050 S. Olive St., Los Angeles, Calif.
Hohman & Bernard Inc., 204 E. 33rd St., New York, N. Y.
Holby Tempering Valve Co., Inc., 1146 Second Ave., New York 21.
Hollaender Mfg. Co., 3841 Spring Grove Ave., Cincinnati 23, O.
Holsclaw Bros., Inc., 408 N. Willow Rd., Evansville 11, Ind.
Holtzer-Cabot Electric Motor Div., National Pneumatic Co., Inc., 125 Armory St., Boston 19, Mass.
Holub Industries, Inc., Sycamore, Ill.
Homestead Valve Mfg. Co., P. O. Box 348, Coraopolis, Pa.
Homestrand Machine Tool Corp., 392 W. Putnam Ave., Greenwich, Conn.
Hoover Ball & Bearing Co., Ann Arbor, Mich.
Hoppes Mfg. Co., Inc., 301 N. Greenmount Ave., Springfield, O.
Horn Companies, A.C., Subsidiary of Sun Chemical Corp., 750 3rd Ave., New York 17, N. Y.
Horton Mfg. Co., 1179 15th Ave., Minneapolis 14, Minn.
Hose Accessories Co., 2700 No. 17th St., Philadelphia 32, Pa.
Hossfeld Mfg. Co., 460 W. Third St., Winona, Minn.
Hotpoint, 5600 W. Taylor St., Chicago 44, Ill.
Hotstream Heater Co., 2363 E. 69th St., Cleveland 4, O.
Houghton & Co., E. F., 303 W. Lehigh Ave., Philadelphia 33, Pa.
Houston Chemical Corp., 200 Madison Ave., New York 16, N.Y.
Howard Industries, Inc., Racine, Wis.
Howe Ice Machine Co., 2825 Montrose Ave., Chicago 18, Ill.
Howell Electric Motors Co., 16316 W. Seven Mile Rd., Detroit 35, Mich.
Howes-Woods Co., 201 Bridge St., Cambridge, Mass.
Hubbell Corp., P. O. Box 700, Hawley Rd., Mundelein, Ill.
Huck Mfg. Co., 2480 Bellvue, Detroit, Mich.
Hudson Engineering Corp., P. O. Box 6158, Houston 6, Tex.
Hudson Industries, Inc., 4400 St. Aubin Ave., Detroit 7, Mich.
Hudson Mfg. Co., H. D., 589 E. Illinois St., Chicago 11, Ill.
Humboldt Mfg. Co., 2016 N. Whipple St., Chicago, Ill.
Humidaire Corp., 313 W. Main St., Genoa, Ill.
Hungerford & Terry, Inc., Clayton, N. J.
Hunt Spiller Mfg. Corp., 383 Dorchester Ave., Boston, Mass.
Hunt Valve Co., Div. of IBEC, 1913 E. State St., Salem, O.
Hunter Div., Robbins & Myers, Inc., 2500 Frisco Ave., Memphis, Tenn.
Hunter Mfg. Co., Aluminum Insulation Div., Bristol, Pa.
Hussey & Co., C. G., Div. of Copper Range Co., 2850 Second Ave., Pittsburgh 19, Pa.
Huyette Co., Inc., Paul B., 401 N. Broad St., Philadelphia 8, Pa.
Hyatt Bearings Div., General Motors Corp., Harrison, N. J.
Hydrauger Corp., Ltd., 681 Market St., San Francisco 5, Calif.
Hydraulic Mfg. Co., 138-A Hurd Ave., Bridgeport 4, Conn.
Hydro-Flex Corp., Box 1165, Topeka, Kans.
Hydromatics, Inc., 70 Okner Pkwy., Livingston, N.J.
Hydrovac Valve Co., 15 Winchester St., Medford 55, Mass.
Hydromation Corp., 900 W. Erie St., Chicago 22, Ill.
Hydronic Co., The, 12685 Arnold Ave., Detroit 39, Mich.
Hydropump, Inc., 165 S. Fair Oaks Ave., Pasadena, Calif.
Hydrotherm, Inc., Clinton Ave., Northvale, N. J.
Hynes Electric Heating Div., Turbine Equipment Co., P. O. Box 578, Westfield, N. J.

I

I.C.E.D., Inc., 579 27th St., So., P. O. Box 10515, St. Petersburg, Fla.
I-T-E Circuit Breaker Co., 1900 Hamilton St., Philadelphia 30, Pa.
I. W. Air Conditioning Corp., 230 Manida St., New York 59, N. Y.
Ideal Corp., 435 Liberty Ave., Brooklyn 7, N. Y.
Ideal Electric & Mfg. Co., E. First & Oak Sts., Mansfield, O.
Ideal Industries, Inc., 1096 Parke Ave., Sycamore, Ill.
Ilg Electric Ventilating Co., 2841 N. Pulaski Rd., Chicago 41, Ill.
Illinois Bronze Powder Co., 2015 S. Clark St., Chicago 16, Ill.
Illinois Engineering Products, American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.
Illinois Malleable Iron Co., 1701 Wellington, Chicago 13, Ill.
Illinois Oil Products, Inc., Illinois Oil Bldg., 4th Ave. and 24th St., Rock Island, Ill.
Illinois Water Treatment Co., 840 Cedar St., Rockford, Ill.

Illinois Zinc Co., Div. of Hydrometals, Inc., 2959 W. 47th St., Chicago 32, Ill.
IMC Magnetics Corp., 570 Main St., Westbury, Long Island, N. Y.
Imeco, Inc., 3033 W. Belmont Ave., Chicago 18, Ill.
Imperial Chemicals Corp., 6505 Wilshire Blvd., Los Angeles 48, Calif.
Imperial Damper Co., 664 Edgecombe Ave., New York 32, N. Y.
Imperial-Eastman Corp., 6300 W. Howard St., Chicago 48, Ill.
Imperial Electric Co., 64 Ira Ave., Akron, O.
Imperial Oil & Grease Co., Inc., 6505 Wilshire Blvd., Los Angeles 48.
Incinerator Products Co., 655 S. Post Ave., Detroit 17, Mich.
Independent Blade Corp., P. O. Box 1482, Joliet, Ill.
Independent Register Co., 3747 E. 93rd St., Cleveland 5, O.
Indus Corp., 1815 Madison Ave., Indianapolis 25, Ind.
Industrial Acoustics Co., Inc., 341 Jackson Ave., New York 54, N. Y.
Industrial Balancing Engrs. Div., Calkins Machine & Tool Wks., East Main, E. Aurora, N. Y.
Industrial Combustion, Inc., 4507 N. Oakland Ave., Milwaukee, Wis.
Industrial Development Laboratories, Inc., 982 River Rd., Edgewater, N. J.
Industrial Engineering Corp., 525 E. Woodbine, Louisville, Ky.
Industrial Engineering & Equipment Co., 24 Hanley Industrial Ct., St. Louis (Brentwood) 17, Mo.
Industrial Filter & Pump Co., 5900 W. Ogden Ave., Cicero, Ill.
Industrial Finishes Co., Inc., 1119 Land Title Bldg., Broad & Chestnut Sts., Philadelphia 10, Pa.
Industrial Laminates Div., Fabric Distributing Co., 42 White St., New York 13, N. Y.
Industrial Marketers, 2505 Pinecrest, Ferndale 20, Mich.
Industrial Metal Protectives, Inc., 401 Homestead Ave., Dayton 8, O.
Industrial Plastic Fabricators, Endicott St., Norwood, Mass.
Industrial Plastics Fittings Co., 11 West Pennsylvania Ave., Towson, Md.
Industrial Products Co., 2666 N. Fourth St., Philadelphia 33, Pa.
Industrial Products Div., Perfex Corp., 500 West Oklahoma Ave., Milwaukee 7, Wis.
Industrial Screw Co., 4920 W. Madison, Chicago 44, Ill.
Industrial Service Co., 2 Richmond St., Providence 3, R.I.
Industrial Sheet Metal Work, 3155 N. Halsted St., Chicago 14, Ill.
Industrial Sound Control, Dept. of Koppers Co., Inc., Metal Products Div., 200 Scott St., Baltimore 3, Md.
Industrial Tape Div., Hampton Mfg. Co., 111 Cedar St., New Rochelle, N. Y.
Industrial Tubular Equipment Co., Div. of Idaho Maryland Industries, Inc., 12906 Saticoy St., North Hollywood, Calif.
Infilco, Inc., P. O. Box 5033, Tucson, Ariz.
Infra Insulation Inc., Western Highway, West Nyack, N. Y.
Infrared Corp. of America, Westbury, Long Island, N.Y.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Ingersoll Steel Div., Borg-Warner Corp., 200 S. Michigan Ave., Chicago 4, Ill.
Inland Heater Corp., Chilacombe & Hwy 280, St. Paul 8, Minn.
Inland Steel Co., 30 W. Monroe St., Chicago 3, Ill.
Inland Steel Products Co., 4101 W. Burnham St., Milwaukee 1, Wis.
Inner-Tite Div. of Yara Engineering Corp., 18 W. Jersey St., Elizabeth 4, N. J.
Insto-Gas Corp., 998 E. Woodbridge St., Detroit 7, Mich.
Instrument Cases, Div. of TA Mfg. Corp., 4607 Alger St., Los Angeles 39, Calif.
Instruments, Inc., P. O. Box 556, Tulsa, Okla.
Insul-Cell Mfg. Co., 2917 W. Jackson St., Muncie, Ind.
Insul-Coustic, Inc., 42-23 54th Rd., Maspeth, Long Island, N. Y.
Insul-Fil Co., Inc., Div. of Miracle Adhesives Corp., 250 Pettit Ave., Bellmore, Long Island, N. Y.
Insul-Wool Insulation Co., 962 Hays Ave., St. Louis, Mo.
Integral Corp., 100 Frank Road, Hicksville, Long Island, N. Y.
Inter-Coastal Paint Corp., 13th St. and Southern R. R., East St. Louis Ill.
Interchemical Corp., Finishes Div., 224 McWhorter St., Newark 1.
International Boiler Works Co., The, 5 Birch St., East Stroudsburg, Pa.
International Business Machines Corp., 590 Madison Ave., New York 22, N. Y.
International Covers for Air Conditioners Corp., 532 Broadway, New York, N. Y.
International Engineering, Inc., 1145 Bolander Ave., Dayton 1, O.
International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.
International Heater Co., 101 Park Ave., Utica 2, N. Y.
International Mfg. Co., 600 E. Grand Ave., Oklahoma City, Okla.
International Metal Hose Co., Ashford Ave., Bellevue, O.
International Metal Products Co., P. O. Box 1712, Phoenix, Ariz.
International Nickel Co., Inc., The, 67 Wall St., New York 5, N. Y.
International Powder Metallurgy Inc., Ridgway, Pa.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
International Vermiculite Co., Girard, Ill.
Interstate Heater Mfg. Co., 2627 West 6th Ave., Denver, Colo.
Iona Ventilator Co., Inc., 2821-29 W. Dauphin St., Philadelphia 32.
Ionac Chemical Co., The, Div. of Pfaudler Permutit, Inc., Birmingham, N.J.
Ionaire, Inc., 390 First St., San Francisco 5, Calif.
Iron Fireman Mfg. Co., 3170 W. 106 St., Cleveland 11, O.
Iron Lung Ventilator Co., 5403 Prospect Ave., Cleveland 3, O.
Irvington Div., Minnesota Mining & Mfg. Co., P. O. Box 108, Freehold, N.J.
Isoflex Corp., 1564 Rollins Rd., Burlingame, Cailf.

J

Jabsco Pump Co., 1845 Dale Way, Costa Mesa, Calif.
Jack & Heintz, Inc., 17600 Broadway, Cleveland 1, O.
Jackes-Evans Mfg. Co., Controls Div., 4427 Geraldine Ave., St. Louis 15, Mo.
Jackson & Church Co., 321 N. Hamilton Ave., Saginaw 65, Mich.
Jackson-Markus Supply Co., 3612 E. 26th St., Los Angeles 24, Calif.
Jaco Devices Co., 100 High St., Hingham, Mass.
Jaco Manufacturing Co., 106 First St., Berea, O.
James Foundry Corp., Ft. Atkinson, Wis.
Jamesbury Corp., 45 New St., Worcester 5, Mass.
Jamieson Mfg. Co., 517 Bedford St., Dallas 12, Tex.
Jan-Air, Inc., Richmond, Ill.
Janette Mfg. Co., Lehigh at Main, Morton Grove, Ill.
Janitrol Heating & Air Conditioning Div., Surface Combustion Corp., 400 Dublin Ave., Columbus, O.
Jarett Compressor and Equipment, Inc., 275 Central Ave., Newark, N.J.
Jarrow Products, Inc., 1238-50 W. Fullerton, Chicago 14, Ill.
Jefferson Electric Co., 25th & Madison St., Bellwood, Ill.
Jefferson Union Co., 31 Fletcher Ave., Lexington 73, Mass.
Jeffrey Mfg. Co., 859 N. Fourth St., Columbus 16, O.
Jemco Tool Corp., 22 State St., Seneca Falls, N. Y.
Jenkins Bros., 100 Park Ave., New York 17, N. Y.
Jenn-Air Products Co., 1102 Stadium Drive, Indianapolis 7, Ind.
Jennison Co., The, 87 Putnam St., Fitchburg, Mass.
Jerome Hydraulics Co., Inc., 208 E. Second St., Mineola, N.Y.
Jessop Steel Co., Washington, Pa.
Jet-Heet, Inc., 152 S. Van Brunt St., Englewood, N. J.
Jet-Lube, Inc., 3093 N. California St., Burbank, Calif.
Jewel Mfg. Co., 1841 University Ave., St. Paul 4, Minn.
Johns-Manville Corp., 22 E. 40th St., New York 16, N. Y.
Johnson Bronze Co., New Castle, Pa.
Johnson Co., S. T., 940 Arlington Ave., P. O. Box 8152, Oakland 8, Calif.
Johnson Corp., The, 806 Wood St., Three Rivers, Mich.
Johnson Degree Day Systems, 329 S. Pitcher St., Kalamazoo, Mich.
Johnson Gas Appliance Co., 520 "E" Ave., N. W., Cedar Rapids, Ia.
Johnson Heater Corp., 1 Winnisimet St., Chelsea, Mass.
Johnson Machine Works, 619 Menomonie St., Eau Claire, Wis.
Johnson Mfg. Co., Inc., Mt. Vernon, Ia.
Johnson-March Corp., 3018 Market St., Philadelphia 4, Pa.
Johnson Metal Hose, Inc., 10 Sperry St., Waterbury 20, Conn.
Johnson Plastics Corp., Box 100, Chagrin Falls, Ohio.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Johnson-Williams Inc., 2625 Park Blvd., Palo Alto 24, Calif.
Johnston Bros., Inc., Perrysburg, Mich.
Johnston & Chapman Co., 2925 Carroll Ave., Chicago 12, Ill.
Johnston Foil Mfg. Co., 6100 S. Broadway, St. Louis 11, Mo.
Johnston & Jennings Co., 6917 Bessemer Ave., Cleveland 27, O.
Johnston Pump Co., A Div. of the Youngstown Sheet & Tube Co., P. O. Bin "K", Pasadena 15, Calif.
JO-Line Tools, Inc., 8442 Otis St., South Gate, Calif.
Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30, Pa.
Jones & Laughlin Steel Corp., Stainless Steel Div., Box 4606, Detroit, Mich.
Jones Machinery Div., Hewitt-Robins, Inc., 4401 Roosevelt Rd., Chicago.
Jordan & Co., Inc., Paul R., 520 S. New Jersey St., Indianapolis 25, Ind.
Josam Manufacturing Co., Corymbo Rd., Michigan City, Ind.
Joslyn Mfg. & Supply Co., 155 N. Wacker Dr., Chicago, Ill.
Joy Mfg. Co., Dept. 20, Henry W. Oliver Bldg., Pittsburgh 22, Pa.
Justrite Mfg. Co., 2061 N. Southport Ave., Chicago 14, Ill.

K

K-G Equipment Co., 1744 Lehigh St., Allentown, Pa.
KSM Products, Inc., 301 New Albany Rd., Moorestown, N.J.
Kaiser Aluminum & Chemical Sales, Inc., Kaiser Center, Oakland, Calif.
Kaiser Co., E. B., 2114 W. Lake Ave., P. O. Box 47, Glenview, Ill.
Kalamazoo Div., New York Air Brake Co., Kalamazoo, Mich.
Kalamazoo Tank & Silo Co., Machine Tool Div., 500 Harrison St., Kalamazoo 16, Mich.
Kam Products Corp., 245 Alabama Ave., Brooklyn, N. Y.
Kane Mfg. Corp., Kane, Pa.
Kargard Co., The, Marinette, Wis.
Kass Hardware & Supply Co., Inc., 443 East Tremont Ave., Bronx 57, N. Y.
Kates Co., W. A., The, 430 Waukegan Rd., Deerfield, Ill.
Kato Engineering Co., 1415 First Ave., Mankato, Minn.
Kaufman Co., H. J., The, 13215 Roselawn Ave., Detroit 38, Mich.
Kaustine Furnace & Tank Corp., 1492 Washington Ave., Perry, N. Y.
Kawneer Co., Niles, Mich.
Kaydon Engineering Corp., The, McCracken St., Muskegon, Mich.
Kaye & MacDonald, Inc., 11-15 Central Ave., West Orange, N. J.
Kaykor Industries, Inc., Yardville, N. J.
Keasbey Co., Robert A., 139-149 W. 19th St., New York, N. Y.
Keasbey & Mattison Co., Butler Ave., Ambler, Pa.
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Keco Industries, Inc., 2438 Beekman St., Cincinnati 14, O.
Keeler Co., E., 238 West St., Williamsport 3, Pa.
Keeney Mfg. Co., Main St., Newington 11, Conn.
Keflex Mfg. Div., U. S. Flexible Metallic Tubing Co., 63 Main St., San Francisco 5, Calif.
Keldur Div. of Quimby & Co., 80 Oakdale Rd., Chester, N. J.
Keleket X-Ray Corp., 1601 Trapelo Rd., Waltham 54, Mass.
Kellogg-American Div., Scaife Co., 26 Ann St., Oakmont, Pa.
Kellogg Co., M. W., The, 711 3rd Ave., New York 17, N. Y.
Kelvinator Div., American Motors Corp., 14250 Plymouth Rd., Detroit, Mich.
Kenco Mfg. Co., 5211 Telegraph Rd., Los Angeles 22, Calif.
Kenco Pump Div., American Crucible Products Co., 1305 Oberlin Ave., Lorain, O.
Kendall Co., The, Fiber Products Div., Walpole, Mass.
Kendall Co., Polyken Sales Div., 309 W. Jackson Blvd., Chicago 6, Ill.
Kenite Laboratory, 23 Samson Ave., P. O. Box 268, Madison, N. J.

Kenmore Machine Products, Inc., 15 Depew Ave., Lyons, N. Y.
Kennard Products, American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.
Kennedy Valve Mfg. Co., The, Elmira, N. Y.
Kenney Co., L. C., 2300 W. 59th St., Chicago 36, Ill.
Ken-Ray Brass Products, Inc., Vermont, Ill.
Kensico Tube Co., Div. of Robinson Technical Products, Inc., Mt. Kisco, N. Y.
Kent Co., Inc., 716 Canal St., Rome, N. Y.
Kent-Moore Organization, Inc., 28635 Mound Rd., Warren, Mich.
Ken-Way Corp., Sparta, Wis.
Kepner Products Co., 7303 W. 59th St., Summit, Ill.
Kerotest Mfg. Co., 2525 Liberty Ave., Pittsburgh 22, Pa.
Kester Solder Co., 4201 Wrightwood Ave., Chicago 39, Ill.
Key-Hak Div., Producers & Distributors, Inc., 1321 Hanover Ave., Allentown, Pa.
Keystone Carbon Co., Inc., 1935 State St., St. Marys, Pa.
Keystone Valve Corp., P. O. Box 6716, Houston 5, Tex.
Kice Metal Products Co., 2040 So. Mead Ave., Wichita 11, Kans.
Kidde Mfg. Co., Inc., 35 Farrand St., Bloomfield, N. J.
Kidder Mfg. Co., Inc., J. F., 426 Colchester Ave., Burlington, Vt.
Kieley & Mueller, Inc., 64 Genung St., Middletown, N. Y.
Kilbury Mfg. Co., Inc., 14529 Hawthorne Blvd., Lawndale, Calif.
Kilgore, Inc., International Flare-Signal Div., Westerville, O.
Killebrew Engineering Corp., 8640 Pardee Lane, St. Louis 26, Mo.
King Co. of Owatonna, The, 928 N. Cedar St., Owatonna, Minn.
King Engineering Corp., 945 Willard Ave., Ann Arbor, Mich.
King Refrigerator Co., 76-02 Woodhaven Blvd., Glendale, N. Y.
King Union Co., Inc., Hillsgrove, R. I.
King Zeero Co., The, 4300 — 14 W. Montrose Ave., Chicago 41, Ill.
Kingsford Foundry & Machine Wks., 264 W. Second St., Oswego, N. Y.
Kingston-Conley, Inc., Div. of the Howell Electric Motors Co., Plainfield, N. J.
Kingston National Controls Div., Kingston Industries, Inc., 35 North St., Medfield, Mass.
Kinney Vacuum Div., The New York Air Brake Co., 3529 Washington St., Boston 30, Mass.
Kirk & Blum Mfg. Co., 3130 Forrer St., Cincinnati 9, O.
Kirsch Co., Refrigeration Div., Sturgis, Mich.
Kisco Boiler & Engineering Co., 2414 Dekalb St., St. Louis 4, Mo.
Klauer Mfg. Co., 9th and Washington Sts., Dubuque, Ia.
Kleer Kleen Mfg. Co., 103 Orchard Ave., Hayward, Calif.
Klenk's Aviation Snips, 107 E. 5th St., Wilmington, Del.
Kling Bros., Engineering Works, 1320 N. Kostner Ave., Chicago 51, Ill.
Klipfel Valves, Inc., 1075 Lincoln Ave., Hamilton, O.
Knapp Bros. Mfg. Co., 9000 Shell Rd., Cincinnati 36, O.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Knight Co., Maurice A., Kelley Ave., Akron 9, O.
Knowles Mushroom Ventilator Co., Inc., 330 Race St., Philadelphia 6.
Kobe Inc., 3040 E. Slauson, Huntington Park, Calif.
Kody Blower Co., 200 Bunting Ave., Trenton 5, N. J.
Kohlenberger Engineering Corp., 1600 W. Commonwealth Ave., Fullerton, Calif.
Kol-Master Corp., 161 Walberg St., Oregon, Ill.
Kool Engineering Corp., 1320 N. Clybourn Ave., Chicago 18, Ill.
Kopperman & Sons, Inc., Joseph, 316 New St., Philadelphia 6, Pa.
Koppers Co., Inc., Koppers Bldg., Pittsburgh 19, Pa.
Koppers Co., Inc., Metal Products Div., 200 Scott St. Baltimore 3.
Kor-It Co., Inc., 991 Richard Ave., Santa Clara, Calif.
Korfund Co., Inc., Cantiague Rd., Westbury, L. I., N. Y.
Koven & Bro. Inc., L. O., Richboynton Rd., Dover, N.J.
Kraissl Co., Inc., The, Terhune and Williams Aves., Hackensack, N. J.
Kraloy Plastic Pipe Co., Inc., 4720 E. Washington Blvd., Los Angeles.
Kramer Trenton Co., N. Olden & Breunig Aves., Trenton 5, N. J.
Kresky Mfg. Co., Inc., Second & H Streets, Petaluma, Calif.
Krieg, Inc., Victor J., 611 Broadway, New York, N. Y.
Kritzer Products Div., Peerless of America, Inc., 5800 N. Pulaski Rd., Chicago 46, Ill.
Kritzer Radiant Coils, Inc., 325 North River St., Batavia, Ill.
Krueger Air Conditioning Co., 19 E. Rillito St., Tucson, Ariz.
Krueger Sentry Gauge Co., 1056 W. Mason St., Green Bay, Wis.
Krylon, Inc., Ford & Washington Sts., Norristown, Pa.
Kuhns Bros. Co., 1800 McCall St., Dayton 8, O.
Kulka Electric Corp., 633 S. Fulton Ave., Mt. Vernon, N. Y.
Kunkle Valve Co., 121 S. Clinton St., Ft. Wayne 2, Ind.
Kurz & Root Co., Appleton, Wis.

L

L. K. Iron Works, 3531 Third Ave., New York, N. Y.
L M R Engineering Corp., Clayton P. O. Box 106, St. Louis 5, Mo.
L. R. P., Inc., Leicester, N. Y.
Laars Engineers, 13246 Saticoy St., North Hollywood, Calif.
Labelon Tape Co., Inc., 450 Atlantic Ave., Rochester 9, N. Y.
LaBour Co., Inc., The, 1607 Sterling Ave., Elkhart, Ind.
Laclede Steel Co., Arcade Bldg., Rm. 1317, St. Louis 1, Mo.
Laclede Stoker Co., 4438 Hunt Ave., St. Louis 10, Mo.
La Crosse Steel Roofing & Corrugating Co., 227 Jay St., La Crosse, Wis.
Ladish Co., 5300 S. Packard Ave., Cudahy, Wis. (Milwaukee Suburb).
Ladish Co., Tri-Clover Div., 2809 60th St., Kenosha, Wis.
LaFavorite Rubber Mfg. Co., 256 Wagaraw Rd., Hawthorne, N. J.
Laharco Industries, 721-2nd Ave., N., Minneapolis 5, Minn.
Lake Chemical Co., 3052 W. Carroll Ave., Chicago 12, Ill.
Lakewood Engineering & Mfg. Co., 212 N. Carpenter St., Chicago 7, Ill.
Laminated Sheet Products Corp., 449 Neponset St., Norwood, Mass.
Lammert & Mann Co., Wood & Walnut Sts., Chicago 12, Ill.
Lamson & Sessions Co., The, 5000 Tiedeman Rd., Cleveland 9, O.
Lancaster Pump & Mfg. Co., Inc., 1340 Manheim Pike, Lancaster, Pa.
Landis Machine Company, Fifth and Church Sts., Waynesboro, Pa.
Lapp Insulator Co., LeRoy, N. Y.
Laramy Products Co., 90 South St., Hingham, Mass.
Larkin Coils, Inc., 519 Memorial Dr., S. E., Atlanta 1, Ga.
Lasco Industries, 156 Chapin Rd., Montebello, Calif.
Lastik Paint, Inc., Suite 406, 200 S. Craig St., Pittsburgh 13, Pa.
Lattner Mfg. Co., P. M., 1414-9th St., S. W., Cedar Rapids, Iowa.
Lau Blower Co., 2027 Home Ave., Dayton 7, O.
Lawler Automatic Controls, Inc., 453 N. MacQuesten Pkwy., Mount Vernon, N. Y.
Lawrence Pump & Engine Co., P. O. Box 70, Lawrence, Mass.
Lawrence Pumps Inc., 371 Market St., Lawrence, Mass.
Layne & Bowler, Inc., Box No. 6697, Hollywood Sta., Memphis 8, Tenn.
Layton Co., Inc., 4711 S. Whitnall Ave., Cudahy, Wis.
Leach Relay Co., 5915 Avalon Blvd., Los Angeles 3, Calif.
Lead Lined Iron Pipe Co., 1 Broadway, Wakefield, Mass.
Leahy Mfg. Co., 1804 E. 8th St., Los Angeles 21, Calif.
Leavitt Machine Co., East River St., Orange, Mass.
Lecourtenay Co., 5 Maine St., Newark 5, N. J.
Ledeen Mfg. Co., 3350 No. Gilman Rd., El Monte, Calif.
Leece-Neville Co., The, Athens Highway, Gainesville, Ga.
Lee Corp., P. O. Box 1801, Wilmington, Del.
Lee Vine Fin-Tube Radiator Co., Inc., 10 Fair St., New Haven, Conn.
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa.
Lees Div., John, The, Serrick Corp., Batavia St. and Kilgore Ave., Muncie, Ind.
Leffel & Co., James, The, 426 East St., Springfield, O.
Lehigh Fan & Blower Div., Fuller Co., 124 Bridge St., Catasauqua, Pa.
Lehigh Mfg. Co., Div. of Lehigh, Inc., Easton, Pa.
Leibfried Mfg. Corp., C. H., 95 Guernsey St., Brooklyn 22, N. Y.
Leiman Bros., Inc., 163 Christie St., P. O. Box 1339, Newark, N. J.
Leland Ohio Electric Co., The, Subsid. of Howell Electric Motors Co., 1501 Webster St., Dayton 1, O.
Lemlar Mfg. Co., 715 W. Redondo Beach Blvd., Gardena, Calif.
Lenco, Inc., 350 W. Adams St., Jackson, Mo.
Lenk Mfg. Co., Franklin, Ky.
Lenly Mfg. Co., Inc., 901 E. 9th St., Los Angeles 21, Calif.
Lennox Industries Inc., Marshalltown, Ia.
Lennox Industries Inc., 1711 Olentangy River Rd., Columbus, O.
Lennox Industries Inc., Box 1294, Des Moines, Ia.
Lennox Tool and Machine Builders, Dept. 173, Lima, O.
Lenz Co., 3301 Klepinger Rd., Dayton 1, O.
Leonard Precision Products Co., 9200 Bolsa Ave., Santa Ana, Calif.
Leonard Valve Co., 1360 Elmwood Ave., Cranston 7, R. I.
LeRoi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.
Leslie Co., 237 Grant Ave., Lyndhurst, N. J.
Leslie Welding Co., Inc., 11241 W. Melrose St., Franklin Park, Ill.
Lester Laboratories, Inc., P. O. Box 4897, Atlanta 2, Ga.
Levow, Inc., David, 7 Georgia St., South Hackensack, N. J.
Lewbill Industries, Inc., 8 Spring St., Scottdale, Pa.
Lewellen Mfg. Co., Columbus, Ind.
Lewin-Mathes Co., Div. of Cerro de Pasco Corp., 1111 Chouteau Ave., St. Louis 2, Mo.
Lewis & Saunders, Inc., Lakeport, N. H.
Lewis Mfg. Co., Inc., 3044 S. W. 28th Lane, Miami 33, Fla.
Lexington Controls, Inc., Box 132, Burlington, Mass.
Lexsuco, Inc., 33095 Bainbridge Rd., Solon, O.
Leyman Mfg. Corp., McGowan Pump Div., 3372 Central Parkway, Cincinnati 25, O.
Liaison Engineering Services, P. O. Box 5, Garland, Tex.
Libbey-Owens-Ford Glass Co., 811 Madison Ave., Toledo 1, O.
Libert Machine Co., 324 N. Roosevelt St., Green Bay, Wis.
Liberty Combustion Corp., E. Molloy Rd., Industrial Park, P. O. Box 300, Syracuse 1, N. Y.
Librascope, Inc., Commercial Div., 133 East Santa Anita Ave., Burbank, Calif.
Lidseen of North Carolina, Inc., 1000 First St., Hayesville, N. C.
Lientz Co., B. P., 2132 Jefferson, Kansas City 8, Mo.
Lilie-Hoffmann Cooling Towers, Inc., 1450 So. Vandeventer Ave., St. Louis 10, Mo.
Lima Electric Motor Co. Inc., The, Lima, O.
Lima Register Co., 1790 N. Cable Rd., Lima, O.
Lincoln Electric Co., The, 22801 St. Clair Ave., Cleveland 17, O.
Linde Co., Div. of Union Carbide Corp., 270 Park Ave., New York 17, N. Y.
Lindy Heaters, Inc., 2370 Hoffman St., Bronx 58, N. Y.
Line Material Industries, McGraw-Edison Co., 700 W. Michigan, Milwaukee 1, Wis.
Linear Incorporated, N. W. Cor. State Rd. & Levick St., Philadelphia 35, Pa.
Link-Belt Co., Prudential Plaza, Chicago 1, Ill.
Lintern Corp., Route 20 East, Painesville, O.
Liquidometer Corp., 37-15 Skillman Ave., Long Island City 1, N. Y.
Liqui-Therm Products, Inc., 3220 N. 126th St., Brookfield, Wis.
Lithcote Corp., 5000 W. Lake St., Melrose Park, Ill.
Little Brass Goods Co., M. S., 151 New Park Ave., Hartford 6, Conn.
Little Giant Pump Div., Little Giant Corp., 3810 N. Tulsa, P. O. Box 7025, Oklahoma City, Okla.
Littleford Bros., Inc., 453 E. Pearl St., Cincinnati 2, O.
Locke Regulator Co., Walter and Osborne Sts., Salem, Mass.
Lockformer Co., The, 4615 W. Roosevelt Rd., Chicago 50, Ill.
Lockport Mills, Inc., Lockport, N. Y.
Logan Clay Products, The, Box 698, Logan, O.
London Chemical Co., 1535 N. 31st Ave., Melrose Park, Ill.
Longergan Co., J. E., 2nd and Race Sts., Philadelphia 6, Pa.
Longyear Co., E. J., 76 S. 8th St., Minneapolis 2, Minn.

Lookout Boiler & Mfg. Co., Compress St. & Mfrs. Rd., Chattanooga 1, Tenn.
Lord & Clark Co., Inc., 791 Tremont St., Boston 18, Mass.
Lord Mfg. Co., 1635 W. 12th St., Erie, Pa.
Louisville Drying Machinery Unit, General American Transportation Corp., 139 So. 4th St., Louisville 2, Ky.
Lovejoy Flexible Coupling Co., 4987 W. Lake St., Chicago 44, Ill.
Lowell Wrench Co., 18 Burt St., Worcester 4, Mass.
Lucey Alloy Products Corp., 901 S. Holtzclaw Ave., Chattanooga 4, Tenn.
Ludlow Valve Mfg. Co., Inc., The, Foot of Adams St., Troy, N. Y.
Lufkin Rule Co., Saginaw, Mich.
Lug-All Co., The, 355 Lancaster Ave., Haverford, Pa.
Lukens Steel Co. and Divisions, 308 S. First Ave., Coatesville, Pa.
Luminator, Inc., 120 N. Peoria St., Chicago 7, Ill.
Lumm Co., A. H., 3151 South Ave., Toledo 9, O.
Lundell & Co., P. O. Box 156, Mt. Prospect, Ill.
Lunkenheimer Co., P. O. Box 360, Annex Station, Cincinnati 14, O.
Lurie & Lurie, 560 W. Washington, Chicago 6, Ill.
Luzerne Rubber Co., Muirhead Ave., Trenton 7, N. J.
Lynchburg Foundry Co., Courtland Bldg., Lynchburg, Va.

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M B Electronics, P. O. Box 1825, New Haven 8, Conn.
M & E Mfg. Co., 2571 Winthrop Ave., Indianapolis, Ind.
M & H Valve & Fittings Co., Div. of Walworth Co., Anniston, Ala.
M-M-A, Inc., Coho Bldg., Lancaster, Pa.
M-M-M, Inc., 1315 Hutchins, P. O. Box 2114, Houston, Tex.
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
Macksons Co., 125 Cedar St., New York 6, N. Y.
Mac-Lean-Fogg Lock Nut Co., 5535 N. Wolcott Ave., Chicago 40, Ill.
Madden Brass Products Co., P. O. Box 444, Aurora, Ill.
Madden Corp., The, 1345 Jarvis Ave., Chicago, Ill.
Mader Machine Co., 1114 W. 13th St., Lorain, O.
Magic Aire Div., United Electric Co., P. O. Box 119, Wichita Falls, Tex.
MaGirl Foundry & Furnace Co., 413 E. Oakland Ave., P. O. Box 636, Bloomington, Ill.
Magnatrol Valve Corp., 67 5th Ave., Hawthorne, N. J.
Magnetic Seal Corp., 166 Bay Spring Ave., W. Barrington, R.I.
Magnetrol, Inc., 2110 S. Marshall Blvd., Chicago 23, Ill.
Magnode Products, Inc., Box 292, Trenton, O.
Magnus Chemical Co., South Ave., Garwood, N. J.
Mahon Co., R. C., The, P. O. Box 4666, Detroit 34, Mich.
Maid-O'-Mist, Inc., 3217 N. Pulaski Rd., Chicago 41, Ill.
Main Cornice Works, Inc., 2824 North Main St., Los Angeles, Calif.
Majac Inc., 23rd St., Sharpsburg, Pittsburgh 15, Pa.
Major Controls, P. O. Box 537, Corona, Calif.
Malleable Iron Fittings Co., Branford, Conn.
Mallory & Co., Inc., P. R., 62 S. Gray St., Indianapolis 6, Ind.
Malsbary Mfg. Co., 845 92nd Ave., Oakland 3, Calif.
Mamco Corp., 4th & Ontario, Racine, Wis.
Mammoth Industries, Inc., 6425 Cambridge St., Minneapolis 16, Minn.
Manhattan Perforated Metal Co., Inc., 43-17 37th St., Long Island City 1, N. Y.
Manheim Mfg. & Belting Co., 325 Stiegel St., Manheim, Pa.
Manitowoc Shipbuilding, Inc., 16th & The River, Manitowoc, Wis.
Mannesmann-Easton Plastic Products Co., Inc., 900 Line St., Easton, Pa.
Manning & Lewis Engineering Co., 675 Rahway Ave., Union, N.J.
Manning, Maxwell & Moore, Inc., 250 East Main St., Stratford, Conn.
Mansfield & Green, Inc., 1051 Power Ave., Cleveland 14, O.
Manufacturers Corp., 104 Ausdale Ave., P. O. Box 434, Mansfield, O.
Manufacturers Engineering & Equipment Corp., Hatboro, Pa.
Manville Boiler Co., Inc., Singer St., Hackettstown, N.J.
Maple City Furnace Co., Monmouth, Ill.
Maplewood Div., Rockford Machine Tool Co., 2500 Kishwaukee St., Rockford, Ill.
Marathon Electric Mfg. Corp., Cherry and Randolph Sts., P. O. Box 630, Wausau, Wis.
Marble Electric Corp., Gladstone, Mich.
March Mfg. Co., Inc., 8015 N. Lawndale Ave., Skokie, Ill.
Marco Development Co., Inc., P. O. Box 325, Wilmington 99, Del.
Marco Electric Mfg. Corp., 3d & Franklin Sts., Womelsdorf, Pa.
Mar-Coil Heater Co., 200 Paterson Plant Rd., Union City, N. J.
Marginator Co., 1121 W. Magnolia, Burbank, Calif.
Marion Machine Foundry, Inc., P. O. Box 989, Marion, Ind.
Markal Co., 3052 W. Carroll Ave., Chicago 12, Ill.
Markel Electric Products, Inc., 145 Seneca, Buffalo 3, N.Y.
Marketing Dept., National Coal Association, 1130 17th St., N.W., Washington, D.C.
Marley Co., The, 222 West Gregory Blvd., Kansas City 14, Mo
Marlin-Rockwell Corp., 402 Chandler St., Jamestown, N. Y.
Marlo Coil Co., 7100 S. Grand Ave., St. Louis 11, Mo.
Marlow Pumps, Division of Bell & Gossett Co., P. O. Box 200, Midland Park, N. J.
Marquette Coppersmithing Co., Christian & Water Sts., Philadelphia 47, Pa.
Marquette Mfg. Co., Div. of Marquette Corp., 307 E. Hennepin Ave., Minneapolis 14, Minn.
Marsh Instrument Co., Div. of Colorado Oil & Gas Corp., 3501 Howard St., Skokie, Ill.
Marsh Valve Co., 4th St. & Brigham Rd., Dunkirk, N. Y.
Marshalltown Mfg. Co., 901 E. Nevada, Marshalltown, Ia.
Marsto Machine Co., 231 Willard St., West Quincy 69, Mass.
Martin Co., Inc., J. O., 637 Minna St., San Francisco 3, Calif.
Martin Fan & Blower Co., 4634 W. 21st Pl., Chicago 50, Ill.
Marvel Engineering Co., 7227 N. Hamlin Ave., Chicago 45, Ill.
Marviray, Inc., 54 Clifton St., Newark 5, N. J.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Mason Products, Inc., 18 Cranes Ct., Woburn, Mass.
Master-Bilt Refrigeration Mfg. Co., 4209 Folsom Ave., St. Louis 10, Mo.
Master Control Co., The, 2034 Fifth St., Cuyahoga Falls, O.
Master Electric Co., Div. of Reliance Electric & Engineering Co., 126 Davis Ave., Dayton 1, O.
Master Fan Corp., 1323 Channing St., Los Angeles 21, Calif.
Master Mechanics Co., The, Miles Ave. at E. 175th St., Cleveland 28, O.
Master Products Co., 7000 S. Wentworth, Chicago 21, Ill.
Master Vibrator Co., 361 Stanley Ave., Dayton, Ohio.
Mastro-Hoskinson Mfg. Corp., Inc., 640 Hempstead Turnpike, Franklin Sq., Long Island, N. Y.
Mathes Co., The, Div. Glen Alden Corp., Marble Falls, Tex.
Mathey Machine Works, Inc., C. A., P. O. Box 1159, Tulsa, Okla.
Matrix Engineering Corp., 3016 E. Lake St., Minneapolis 6, Minn.
Matthews Electric Heater Mfg. Co., Albertville, Ala.
Matthiessen & Hegeler Zinc Co., 9th & Sterling Sts., La Salle, Ill.
Mauney, Rowe A., Box 623, Marion, N. C.
Maurath, Inc., 21800 Miles Ave., Cleveland 22, O.
Maurey Mfg. Corp., 2907 S. Wabash Ave., Chicago 16, Ill.
Maurlee Co., Inc., South Evergreen Ave., Woodbury Heights, N. J.
Maxitrol Co., 23555 Telegraph Rd., Southfield, Mich.
Maxon Premix Burner Co., P. O. Box 71, Muncie, Ind.
May Company, Galesburg, Ill.
Mayer Refrigerating Engineers, Inc., Lincoln Park, N. J.
Mayne Products Co., 324 Harries Bldg., Dayton 2, O.
McAlear Mfg. Co., 1921 S. Western Ave., Chicago 8, Ill.
McAuley Trap Co., 104 First Ave., Pittsburgh 22, Pa.
McCord Corp., 2587 E. Grand Blvd., Detroit 11, Mich.
McCorkle Co., D. H., 6th & Bancroft Way, Berkeley 10, Calif.
McDonald Mfg. Co., A. Y., 12th & Pine Sts., Dubuque, Iowa.
McDonnell & Miller, Inc., 3500 N. Spaulding Ave., Chicago 18, Ill.
McGraw-Edison Co., Transportation Cooling Div., 5201 W. 65th St., Chicago 38, Ill.
McIntire Co., The, Okner Parkway, P. O. Box 5, Livingston, N. J.
McIntosh Equipment Corp., 15 Park Row, New York 38, N.Y.
McKay Co., 1005 Liberty Ave., Pittsburgh 22, Pa.
McLarty Systems, 2600 Dickman Rd., Battle Creek, Mich.
McMillan Comfortaire, Inc., P. O. Box 5897, 1501 Miami Rd., Jacksonville 7, Fla.
McMillan Industrial Supplies, C. C., 3912 S. W. Dolph Court, Portland 19, Oregon.
McNeill Smoke Eliminator Co., 523 N. Halsted, Chicago, Ill.
McPherson Furnace & Supply Co., 1805 N. E. Second Ave., Portland 12, Ore.
McQuay, Inc., 1600 Broadway, N. E., Minneapolis 13, Minn.
McQuay-Norris Mfg. Co., Southwest Ave. at Marconi, St. Louis 10.
McRae Specialty Co., Don, 750 N. Glendale Ave., Glendale 6, Calif.
McWane Cast Iron Pipe Co., 1201 Vanderbilt Rd., Birmingham 2, Ala.
Mearlcrete Div., Mearl Chemical Corp., 220 Westfield Ave., W., Roselle Park, N. J.
Mears Electric Controls, Inc., P. O. Box 3798, Portland, Ore.
Mears-Kane-Ofeldt, Inc., Div. S. T. Johnson Co., P. O. Box 223, Bridgeport, Pa.
Mechanical Industries Production Co., 217-223 Ash St., Akron 8, O.
Mechanical Products Corp., 1716 W. Hubbard St., Chicago 22, Ill.
Mechanical Products, Inc., 1824 River, Jackson, Mich.
Meier Electric, 3525 E. Washington St., Indianapolis 7, Ind.
Mel Products Co., The, Fonton Rd., East Haven, Conn.
Melchior, Armstrong, Dessau, Inc., Ridgefield, N. J.
Memphis Pump & Mfg. Co., P. O. Box 3215, Memphis, Tenn.
Menardi & Co., 1222 E. Grand Ave., El Segundo, Calif.
Mercer Rubber Co., 146 Mercer St., Hamilton Sq., N. J.
Merchant & Evans Co., 2035 Washington Ave., Philadelphia 46, Pa.
Mercoid Corp., The, 4201 Belmont Ave., Chicago 41, Ill.
Mercury Clutch Div., Automatic Steel Products, Inc., Canton 6, O.
Mercury Hydraulics, Inc., 1632 Wazee St., Denver 2, Colo.
Meriam Instrument Co., The, 10920 Madison Ave., Cleveland 2, O.
Mesker Steel Corp., Geo. L., 400 N. W. First St., Evansville 8, Ind.
Metalcraft Inc., 1619 So. Federal Ave., Mason City, Ia.
Metal Fabricators, Inc., P. O. Box 3232, Charlotte 3, N. C.
Metal Industries, Inc., P. O. Box 479, Clearwater, Fla.
Metal Products Eng., Inc., 4000 Long Beach Ave., Los Angeles 58.
Metal & Thermit Corp., Rahway, N. J.
Metallo Gasket Co., 16 Bethany St., New Brunswick, N. J.
Metallurgical Products Dept. of General Electric Co., 11177 E. 8 Mile Rd., Detroit, Mich.
Metalmaster Corp., 66 Elm St., Newark 5, N. J.
Metalweld, Inc., Industrial Maintenance Div., Scotts Lane & Abbottsford Ave., Philadelphia 29, Pa.
Met-L-Chek Co., 11919 S. Western Ave., Los Angeles 47, Calif.
Met-L-Wood Corp., 6755 W. 65th St., Chicago, Ill.
MetraFlex Co., The, 4948 Dempster St., Skokie, Ill.
Metrex Valve Co., 9901 Franklin Ave., Franklin Park, Ill.
Metropolitan Refining Co., Inc., 50-23 Twenty-Third St., Long Island City 1, N. Y.
Mettler Co., Inc., The, Div. of Eclipse Fuel Engineering Co., 1101 Buchanan St., Rockford, Ill.
Meyer & Bro. Co., F., 308 S. Commercial St., Peoria 2, Ill.
Mever Furnace Co., The, P.O. Box 989, Peoria 1, Ill.
Meyer & Wenthe, Inc., 30 S. Jefferson St., Chicago, Ill.
Meyercord Co., The, 5323 West Lake St., Chicago, Ill.
Michigan Pipe Co., 2415 Burdette Ave., Ferndale 20, Mich.
Michigan Seamless Tube Co., So. Lyon, Mich.
Mic-Lin Co., Route 38 at Rudderow Ave., Maple Shade 6, N. J.
Micro Metallic Div., Pall Corp., 30 Sea Cliff Ave., Glen Cove, N. Y.
Micro Products Co., 20 N. Wacker Dr., Chicago 6, Ill.

Micro Switch Div. of Minneapolis-Honeywell Regulator Co., Chicago & Spring Sts., Freeport, Ill.
Microtron Corp., P. O. Box 2092, Charlotte, N. C.
Midco Register Corp., 1059 Grand Ave., St. Paul, Minn.
Mid-Continent Metal Products Co., 1960 Clybourn Ave., Chicago 4, Ill.
Middlesex Paper Tube Co., Inc., 345 Chemsford St., Lowell, Mass.
Midget Louver Co., 6 Wall St., Norwalk, Conn.
Midland Industrial Div., The Harrison Paint & Varnish Co., 1329 Harrison Ave., S. W., Canton, O.
Mid-States Welder Mfg. Co., 6025 S. Ashland Ave., Chicago 36, Ill.
Midwesco, Inc., 1650 N. Elston, Chicago, Ill.
Midwest Air Conditioning Co., 510 Third St., Des Moines, Ia.
Midwest Airmoving Corp., 4498 Beidler Rd., Willoughby, O.
Midwest Noise Control, 5420 College Ave., Indianapolis 20, Ind.
Midwest Piping Co., Inc., 1450 S. Second St., St. Louis 4, Mo.
Midwest Pump Div. of Sherwood Mfg. Co., 500 N. Dodgion, Independence, Mo.
Miller-Church Industries, Inc., 205 Haven St., Eaton Rapids, Mich.
Miller Electric Mfg. Co., Inc., 718 S. Bounds St., Appleton, Wis.
Miller-Harris Instrument Co., 1134 S. 1st St., Milwaukee 2, Wis.
Miller Mfg. Co., 251 W. Kellog Blvd., St. Paul 2, Minn.
Miller Valve Co., Inc., 1620 Pennsylvania Ave., Pittsburgh 33, Pa.
Millers Falls Co., 57 Wells St., Greenfield, Mass.
Mill-Rose Co., 1985 E. 59th St., Cleveland, O.
Milo Mfg. Co., 259 N. Broad St., Elizabeth, N.J.
Milton Equipment Co., N. E. Cor. 4th Race St., Philadelphia 6, Pa.
Milton Roy Co., 1371 E. Mermaid Ave., Philadelphia 18, Pa.
Milwaukee Electric Tool Corp., 5362 W. State St., Milwaukee 8, Wis.
Milwaukee Valve Co., 2375 So. Burrell St., Milwaukee 7.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Mine Safety Appliances Co., Velocity Power Tool Dept., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Minerallac Electric Co., 25 N. Peoria St., Chicago 7, Ill.
Minneapolis-Honeywell Regulator Co., 2753 4th Ave., S., Minneapolis 8, Minn.
Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim Aves., Philadelphia 44, Pa.
Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6, Minn.
Minnesota Mining & Mfg. Co., Adhesives, Coatings & Sealers Div., 900 Bush Ave., St. Paul 6, Minn.
Minnesota & Ontario Paper Co., Insulite Div., 500 Investors Bldg., Minneapolis 2, Minn.
Minnesota Rubber Co., 3630 Wooddale Ave., Minneapolis.
Minn-Kota Foundry & Mfg. Co., P. O. Box 576, Moorhead, Minn.
Miracle Adhesives Corp., 250 Pettit Ave., Bellmore, N. Y.
Mir-O-Col Alloy Co., Inc., 340 North Ave., 21, Los Angeles 31, Calif.
Mirror Patented Stove Pipe Co., 55-65 Park St., Hartford 14, Conn.
Misener Mfg. Co., Inc., 202-8 Walton St., Syracuse 2, N. Y.
Mission Valve & Pump Co., P. O. Box 4209, Houston, Tex.
Mississippi Glass Co., St. Louis 7, Mo.
Mitchell Co., John E., 3800 Commerce St., Dallas, Tex.
Mitchell & Co., Inc., W. K., 29th & Ellsworth, Philadelphia 46, Pa.
Mitchell Mfg. Co., 3200 W. Peterson Ave., Chicago, Ill.
Mitchell Radiation Products Corp., 128 E. Washington St., Norristown, Pa.
Mobil Oil Co., Inc., 150 E. 42nd St., New York 17, N. Y.
Mobile Drilling, Inc., 960 N. Pennsylvania, Indianapolis, Ind.
Modern Dust Bag Co., Inc., 132 E. Railroad Ave., West Haverstraw, N. Y.
Modern Engineering Co., 3411 Pine Blvd., St. Louis 3, Mo.
Modern Flo-Trol Products Corp., Babylon, N.Y.
Modern Hanger Corp., The, 4734 Hough Ave., Cleveland 3, O.
Modernheat Cable Corp., Box 754, Kingsport, Tenn.
Modern Mfg. Co., Inc., 680 Davisville Rd., Willow Grove, Pa.
Modern Water Equipment Co., 230 E. Main St., Freeport, Ill.
Modine Mfg. Co., 1509 De Koven Ave., Racine, Wis.
Moeller Instrument Co., 132nd St. & 89th Ave., Richmond Hill 18, N. Y.
Moeschl-Edwards Corrugating Co., Inc., The, P. O. Box 1115, Cincinnati 1, O.
Molco Drilling Machines, Inc., 909 Franklin St., N.E., Washington 17, D. C.
Molded Fiber Glass Sheet Co., 4304 Benefit Ave., Ashtabula, O.
Momar Industries, Inc., 4176 W. Montrose, Chicago 41, Ill.
Monarch Mfg. Works, Inc., 2523 E. Ontario St., Philadelphia 34, Pa.
Monash-Younker Co., Inc., 532 So. Throop St., Chicago 7, Ill.
Monitor Controller, 99 Grove St., Rockland, Mass.
Monogram Products Co., Inc., 731 N. 35th St., Philadelphia 4, Pa.
Mono-Seal Products, 427 Broadway, Everett 49, Mass.
Monroe Co., Inc., 10703 Quebec Ave., Cleveland 6, O.
Monsanto Chemical Co., Lindbergh & Olive St. Rd., St. Louis 24, Mo.
Monsanto Chemical Co., 812 Monsanto Ave., Springfield, Mass.
Montag Inc., 8701 N. Denver Ave., Portland 17, Ore.
Montgomery Bros., 1122 Howard St., San Francisco, Calif.
Montgomery Chemical Co., Jenkintown, Pa.
Moore Inc., Goodloe E., 2811 N. Vermilion, Danville, Ill.
Moore Co., The, 800 S. Missouri, Marceline, Mo.
Moore & Co., Samuel, Mantua, O.
Moore Dry Kiln Co., 1220 W. State St., Jacksonville, Fla.
Moore Products Co., H and Lycoming Sts., Philadelphia 24, Pa.
Moorhead-Crego, Inc., 645 S. Green Rd., Cleveland 21, O.
Moran Flexible Joint Co., Div. of Railroad Products Co., 1551 Queen City Ave., Cincinnati 14, O.
Moran Paint Co., P. O. Box 193, Xenia, O.
Morehead Moisture Control, P. O. Box 3854, Parkgrove Sta., Detroit 5, Mich.
Morey, Dan, 814 S. Robertson Blvd., Los Angeles 15, Calif.
Mor-Flo Heater Corp., 2176 E. 76th St., Cleveland 3, O.
Morganite, Inc., Carbon Specialties Div., 3304 48th Ave., Long Island City 1, N. Y.
Morheat Corp., 5548 Stewart Corp., Cincinnati 27, O.
Morrill Motors, 3685 Northrop, Ft. Wayne, Ind.
Morris Coupling & Clamp Co., P. O. Box 10, Kittanning, Pa.
Morris Deodorizers, Inc., 2819 Broadway, N.E., Knoxville 17, Tenn.
Morris Machine Works, Baldwinsville, N. Y.
Morris Sheet Metal Works, 1680 W. Mound St., Columbus 23, O.
Morrison Brothers Co., 24th & Elm Sts., Dubuque, Ia.
Morrison Products, Inc., 16816 Waterloo Rd., Cleveland 10, O.
Morse Boulger, Inc., 80 Fifth Ave., New York 11, N. Y.
Morse Chain Co., Ithaca, N. Y.
Morse-Smith-Morse Co., The, 165 Dexter Ave., Watertown 72, Mass.
Mortell Co., J. W., Kankakee, Ill.
Morton Engineering Service, Paul S., 5131 Meadowlark Lane, Kalamazoo, Mich.
Mt. Hawley Mfg. Co., Inc., 1209 W. Alta Rd., Peoria 4, Ill.
Mountain States Equipment Co., 1238 Speer Blvd., Denver 4, Colo.
Muckle Mfg. Co., Owatonna 3, Minn.
Mueller Brass Co., 1925 Lapeer Ave., Port Huron, Mich.
Mueller Climatrol, Div. of Worthington Corp., 2005 W. Oklahoma Ave., Milwaukee 1, Wis.
Mueller Co., 512 W. Cerro Gordo St., Decatur, Ill.
Muellermist Irrigation Co., 2612 S. 9th Ave., Maywood, Ill.
Mueller Steam Specialty Co., Inc., 29 Meserole Ave., Brooklyn 22, N. Y.
Mulconroy Co., 54th & Jefferson Sts., Philadelphia 31, Pa.
Mult-A-Frame Corp., 6401 Epworth Blvd., Detroit 10, Mich.
Multiplex Mfg. Co., Berwick, Pa.
Multi-Vent Div., Pyle-National Co., The, 1373 Kostner Ave., Chicago 51, Ill.
Muncie Gear Wks., Inc., 700 N. Wysor, Muncie, Ind.
Mundet Cork Corp., 7101 Tonnelle Ave., North Bergen, N. J.
Mundt & Sons, Charles, 53 Fairmount Ave., Jersey City 4, N. J.
Munray Products, Div. of Fanner Mfg. Co., 12400 Crossburn St., Cleveland, O.
Murray Co., 11 W. Pennsylvania Ave., Towson 4, Md.
Murray Iron Wks. Co., 1106 Washington St., Burlington, Ia.
Murray Mfg. Co., D. J., 1002-24 Third St., Wausau, Wis.
Mutual Liquid Gas & Equipment Co., 17129 S. Broadway, Box 392, Gardena, Calif.
Myers & Bro. Co., F. E., The, Ashland, O.
Mystik Adhesive Products, Inc., 4234 W. Drummond Pl., Chicago, Ill.

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Nalco Chemical Co., 6277 W. 66th Pl., Chicago 38, Ill.
Narda Ultrasonics Corp., 625 Main St., Westbury, Long Island, N. Y.
Nash Engineering Co., 307 Wilson Ave., South Norwalk, Conn.
Nason Co., Clarkston, Mich.
National Acme Co., The, 170 E. 131st St., Cleveland 8, O.
National Airoil Burner Co., Inc., 1330 E. Sedgley Ave., Philadelphia 34, Pa.
National Aniline Div., Allied Chemical Corp., 40 Rector St., New York 6, N. Y.
National Asphalt Corp., 2275 Brooklyn Sta., Cleveland 9, O.
National Carbon Co., A Div. of Union Carbide Corp., 270 Park Ave., New York 17, N. Y.
National Clay Pipe Mfg., Inc., 914-20th St., N.W., Washington, D. C.
National Copper & Smelting Co., 1862 E. 123rd St., Cleveland, O.
National Cork Co., 1 Engle Street, Englewood, N. J.
National Cylinder Gas, Div. of Chemetron Corp., 840 N. Michigan Ave., Chicago 11, Ill.
National Dust Collector Corp., 549 W. Washington, Chicago 6, Ill.
National Gas Equipment Co., Inc., P. O. Box 122, Denison, Tex.
National Grille & Register Co., 10740 Broadway Ave., Cleveland, O.
National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y.
National Heater Co., Inc., 2475 Doswell Ave., St. Paul 8, Minn.
National Instrument Laboratories, Inc., 828 Evarts St., N.E., Washington 18, D. C.
National Lead Co., 111 Broadway, New York 6, N. Y.
National Lock Co., Inc., 1902 Seventh St., Rockford, Ill.
National Oil Burner Co. of N. Y., Inc., 614 Bergen St., Brooklyn, N. Y.
National Pipe Bending Co., 122 River St., New Haven 13, Conn.
National Pneumatic Co., Inc., 420 Lexington Ave., New York, N. Y.
National Super Service Co., The, 1944 N. 13th St., Toledo 2, O.
National System of Garage Ventilation, Inc., 138 W. William, Decatur, Ill.
National Tube Div., United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.
National-U. S. Radiator Div., Crane Co., 944 Ash St., Johnstown, Pa.
National Valve & Mfg. Co., 3101 Liberty Ave., Pittsburgh 1, Pa.
Naugatuck Chemical Div., United States Rubber Co., Naugatuck, Conn.
Navan Products Inc., 900 N. Sepulveda, El Segundo, Calif.
Naylor Pipe Co., 1269 E. 92nd St., Chicago 19, Ill.
Nazar Rubber Co., 2727 Avondale, Toledo 7, O.
Nebel Mfg. Co., P. O. Box 3942, Shaker Square Sta., Cleveland 20, O.
Nebraska Boiler Company, Inc., 235 N. 9th St., Lincoln, Nebr.
Neff-Perkins Co., 33 Stage Rd., Painesville, O.
Neilson Chemical Co., 2300 Gainsboro, Detroit 20 (Ferndale), Mich.
Neirad Industries, Inc., P. O. Box 295, Saugatuck, Conn.
Nelson Electric Mfg. Co., 4041 S. Sheridan Rd., Tulsa, Okla.
Nelson Mfg. Co., B. F., 401 Main St., N. E., Minneapolis 13, Minn.
Nelson Stud Welding Div., Gregory Industries, Inc., Toledo Ave. & E. 28th, Lorain, O.
Neptune Meter Co., 19 W. 50th St., New York 20, N. Y.
Nesbitt, Inc., John J., State Rd. & Rhawn St., Philadelphia 36, Pa.
Newage Industries, Inc., 222 York Road, Jenkintown 9, Pa.
Newark Controls Co., 15 Ward St., Bloomfield, N. J.
Newark Wire Cloth Co., 351 Verona Ave., Newark 4, N. J.
Newbery Mfg. Co., Inc., Talladega, Ala.
Newcomb-Detroit Co., 5741 Russell St., Detroit 11, Mich.
New Departure Div., General Motors Corp., Bristol, Conn.
New England Carbide Tool Co., Inc., 55 Commercial St., Medford 55, Mass.

New England Gear Works, Inc., South End Rd., Southington, Conn.
New England Valve Corp., 41 Jackson St., P. O. Box 1047, Worcester, Mass.
New Haven Copper Co., The, Seymour, Conn.
New Hermes Engraving Machine Corp., 154 W. 14th St., New York 11, N. Y.
New London Engineering Co., 1700 Division St., New London, Wis.
Newman Electric Motors Inc., 357 Wilson Ave., Newark 5, N. J.
New York Air Valve Corp., 1850 Atlantic Ave., Brooklyn 33, N. Y.
New York Bellows Co., 25 Spruce St., New York, N.Y.
New York Belting & Packing Co., 1 Market St., Passaic, N. J.
New York Blower Co., 3159 Shields Ave., Chicago 16, Ill.
New York Brass Foundry, 405 Broome St., New York 13, N. Y.
Niagara Blower Co., 405 Lexington Ave., Room 3516, New York 17.
Niagara Machine & Tool Wks., 637-697 Northland Ave., Buffalo 11, N. Y.
Niagara Products Co., 4311 E. Thomas Rd., Phoenix, Ariz.
Nibco Inc., Elkhart, Ind.
Nice Ball Bearing Co., 30th and Hunting Park Ave., Philadelphia 40.
Nicholson & Co., W. H., 178 Oregon St., Wilkes-Barre, Pa.
Nicolet Industries, Inc., Florham Park, N.J.
Nielsen, Inc., E. V., 575 Hope St., P. O. Box 353, Glenbrook Sta., Stamford, Conn.
Nikoh Tube Co., 5000 S. Whipple, Chicago 32, Ill.
Noera Mfg. Co., Div. Chase Brass & Copper Co., Waterbury 20, Conn.
Nooter Corp., 1400 S. Second St., St. Louis 4, Mo.
Norcross Co., Sterling E., 19 Osborne St., Bloomfield, N.J.
Norden-Ketay Corp., Instrument Systems Div., Wiley St., Milford, Conn.
Norgren Co., C. A., 3400 So. Elati St., Englewood, Colo.
Norky Mfg. Corp., P. O. Box 669, 714 Pike St., Covington, Ky.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Normal Chemical Co., 1630 Carroll Ave., St. Paul 4, Minn.
Norman Products Co., Inc., 1150 Chesapeake Ave., Columbus, O.
North American Asbestos Corp., 141 W. Jackson Blvd., Chicago 3, Ill.
North American Mfg. Co., 4455 E. 71st St., Cleveland 5, O.
North American Mogul Products Co., The, Standard Bldg., Cleveland 13, O.
Northern Blower Co., 6428 Barberton Ave., Cleveland 2, O.
Northern Ordnance Inc., Subsidiary of Northern Pump Co., Columbia Heights P. O., Minneapolis 22, Minn.
Norton Co., 1 New Bond, Worcester 6, Mass.
Norwalk Air Conditioning Corp., 138 Water St., S. Norwalk, Conn.
Norwood Products Co., Div. of A. R. Wood Mfg. Co., Luverne, Minn.
Novo Pump & Engine Co., 702 Porter, Lansing, Mich.
Nuclear and Power Equipment Corp., 780 Bryant St., San Francisco, Calif.
Nuclear Products Co., 15635 Saranac Rd., Cleveland 10, O.
Nuclear Systems, A Div. of the Budd Co., Philadelphia 32, Pa.
Nugent & Co., Inc., Wm. W., 3440 Cleveland, Skokie, Ill.
Nupla Mfg. Co., 1026 N. Sycamore, Los Angeles 38, Calif.
Nutmeg Chemical Co., 134 Haven St., New Haven, Conn.
NuTone, Inc., Madison & Red Banks Rds., Cincinnati 27, O.
Nutt Co., Buell W., 11614 W. Pico Blvd., Los Angeles 64, Calif.
Nu-way Corp., The, 2416 4th Ave., Rock Island, Ill.
Nyberg, Stig C., 33 Redfield St., Rye, N. Y.
Nye Tool Co., 4120-30 Fullerton Ave., Chicago 39, Ill.
Nylok Corp., The, 611 Industrial Ave., Paramus, N. J.
Nylon Molding Corp., 141 S. Avenue, Garwood, N. J.

O

OPW-Jordan Corp., 6013 Wiehe Rd., Cincinnati 13, O.
O.T.M. Corp., 7340 Katy Rd., Houston 24, Tex.
Oakite Products, Inc., 19 Rector St., New York 6, N. Y.
Obear & Sons, Inc., 940 W. Florence Ave., P. O. Box 406, Inglewood 1, Calif.
Oberdorfer Foundries, Inc., 3007 Thompson Rd., Syracuse, N. Y.
O'Brien Steam Specialty Co., Inc., P. O. Box 217, Eastwood Station, Syracuse 6, N. Y.
Octagon Process, Inc., 58 Bank St., Staten Island 1, New York.
Octagon Ventilator Mfg. Co., P. O. Box 1127, Jackson, Tenn.
Ohio Brass Co., 380 N. Main St., Mansfield, O.
Ohio Electric Mfg. Co., 5400 Dunham Rd., Maple Heights, O.
Ohio Foundry & Mfg. Co., Penn R. R. & Slack St., Stubenville, O.
Ohio Injector Co., 275 Main St., Wadsworth, O.
Ohio Nut & Bolt Co., 33 First Ave., Berea, O.
Ohio Pipe Bending & Machine Co., 3900 Trent Ave., Cleveland 9, O.
Ohmlac Paint & Refining Co., Inc., 41-40 Crescent Ave., Long Island City, N. Y.
Oil Equipment Mfg. Corp., 169 Derby Ave., New Haven, Conn.
Okadee Co., 332 S. Michigan, Chicago, Ill.
Okonite Co., The, Passaic, N. J.
Old Dominion Iron & Steel Corp., Belle Isle, Richmond, Va.
Olin Mathieson Chemical Corp., Chemicals Div., Mathieson Bldg., Baltimore 3, Md.
Olin Mathieson Chemical Corp., Metals Div., 400 Park Ave., New York, N.Y.
Olin Mathieson Chemical Corp., Metals Div., East Alton, Ill.
Olsen Mfg. Co., 4622 Delemer Blvd., Royal Oak, Mich.
Olsen Mfg. Co., C. A., Elyria, O.
Olsen Testing Machine Co., Tinius, Easton Rd., Willow Grove, Pa.
Omark Industries, Inc., 9701 S.E. McLoughlin Blvd., Portland 22, Ore.
Omega Products, 4700 W. Washington Blvd., Chicago 44, Ill.
Onan & Sons Inc., D. W., 2515 University S. E., Minneapolis 14, Minn.
O'Neil-Irwin Mfg. Co., 541 Eighth, Lake City, Minn.
Optimum Control Corp., 2930 Woodhill Rd., Cleveland 4, O.
Orangeburg Mfg. Co., Orangeburg, N. Y.
Orbit Sales Co., Inc., 185 Church St., New Haven, Conn.
O'Reilly Engineering Co., 4924 W. Davis, Dallas 11, Tex.
Ormsby-Osterman, Inc., 3631 Cass Ave., St. Louis 13, Mo.
Orr & Sembower, Inc., Box 1138, Reading, Pa.
Osborn Mfg. Co., 5401 Hamilton Ave., Cleveland 14, O.
Oshkosh Filter & Softener Co., 204 Ceape Ave., P. O. Box 137, Oshkosh, Wis.
Oster Mfg. Co., The, 1340 E. 289th St., Wickliffe, O.
OverHead Heaters Inc., 1612 Book Bldg., Detroit 26, Mich.
Owatonna Tool Co., 200 N. Cedar, Owatonna, Minn.
Owens Co., H., 9300 Venice Blvd., Culver City, Calif.
Owens & Co., Inc., Henry, 51 Washington Ave., Cranston 7, R. I.
Owens-Corning Fiberglas Corp., 717 Fifth Ave., New York 22, N. Y.
Oxy Catalyst, Inc., Wayne, Pa.
Oxygen Equipment & Service Co., 8335 S. Halsted St., Chicago 20.
Ozalid Div. of General Aniline & Film Corp., 1505 Ansco Rd., Johnson City, N. Y.

P

Pabco Industrial Insulations Div., Fibreboard Paper Products Corp., 475 Brannan St., San Francisco 19, Calif.
Pace Inc., R.M., 1339 N. Pennsylvania, Indianapolis 2, Ind.
Pacific Fittings Div., General Metals Corp., Hollydale, Calif.
Pacific Lumber Co., The, 100 Bush St., San Francisco 4, Calif.
Pacific Pumping Co., 9201 San Leandro Blvd., Oakland, Calif.
Pacific States Felt & Mfg. Co., Inc., 845 Howard St., San Francisco.
Pacific Steel Boiler Div., Crane Co., 944 Ash St., Johnstown, Pa.
Pacific Transducer Corp., 11836 W. Pico Blvd., Los Angeles 64, Calif.
Pacific Tube Co., 5710 Smithway St., Los Angeles 22, Calif.
Pacific Valves, Inc., 3201 Walnut Ave., Long Beach 7, Calif.
Packard Water Conditioners, Inc., 1720 Prudential Bldg., Jacksonville, Fla.
Packless Metal Hose, Inc., 730-12 S. Columbus Ave., Mt Vernon, N. Y.
Page Steel & Wire, Div. of American Chain & Cable Co., Inc., Monessen, Pa.
Paine Co., 2 Westgate Rd., Addison, Ill.
Palmer Electric Co., Inc., 230 E. Alexandrine, Detroit 1, Mich.
Palmer Fan Div., Palmer Engineering Co., 550 Main Ave., West De-Pere, Wis.
Palmer-Shile Co., 16072 Fullerton, Detroit 27, Mich.
Palmer Thermometers, Inc., 2501 Norwood Ave., Cincinnati (Norwood) 12, O.
Pal-O-Pak Insulation Co., Inc., Hartland, Wis.
Pam Co., The, 1951 N. W. Wilson St., Portland, Ore.
Pam Narrow Fabrics Co., 2807 Long Beach Rd., Oceanside, N. Y.
Panel Heat, Inc., 1395 Marconi Blvd., Copiague, N. Y.
Pangborn Corp., 400 Pangborn Blvd., Hagerstown, Md.
Pantex Mfg. Corp., P. O. Box 660, Pawtucket, R. I.
Pape-Swift Boiler Reference Publications, 201 S. Kirkwood Rd., Kirkwood 22, Mo.
Paragon Electric Co., 1609 Twelfth St., Two Rivers, Wis.
Paragon-Revolute Div. of Charles Bruning Co., Inc., 77 South Ave., Rochester 4, N. Y.
Parish Co., 3310 Burgundy St., New Orleans 17, La.
Parke-Hill Chemical Corp., 29 Bertel Ave., Mt. Vernon, N. Y.
Parker Boiler Mfg. Co., Sid E., 2035 E. 37th St., Los Angeles 58.
Parker Fittings & Hose Div. of Parker-Hannifin Corp., 17325 Euclid Ave., Cleveland 12.
Parker-Kalon, A Div. of General American Transportation Corp., Clifton, N. J.
Parker Seal Co., Div. of Parker-Hannifin Corp., 17325 Euclid Ave., Cleveland 12, O.
Parks-Cramer Co., P. O. Box 444, Fitchburg, Mass.
Parsons Co., Div. of Koehring Co., 200 N. 8th Ave., E., Newton, Ia.
Partlow Corp., The, 203 Campion Rd., New Hartford, N. Y.
Patco Mfg. Co., Inc., 231 N. Bread St., Philadelphia, Pa.
Patrol Valve Co., The, 2310 Superior Ave., Cleveland 14, O.
Patten Co., J. V., Sycamore, Ill.
Patterson-Kelley Co., Inc., The, 465 Warren St., East Stroudsburg, Pa.
Paul-Lewis Laboratories, Inc., 4253 N. Port Washington Rd., Milwaukee 12, Wis.
Payne Company, 855 Anaheim Puente Rd., La Puente, Calif.
Peabody Engineering Corp., 232 Madison Ave., New York 16, N. Y.
Pease Co., C. F., The, 2601 W. Irving Park Rd., Chicago 18, Ill.
Peck Co., Cecil C., 14901 Woodworth Rd., Cleveland 10, O.
Peck, Stow & Wilcox Co., Center St., Southington, Conn.
Pecora Inc., 300-400 W. Sedgley Ave., Philadelphia 40, Pa.
Peden Equipment Co., 4512 Mt. Vernon, Houston, Tex.
Pedrick Tool & Machine Co., 3640 N. Lawrence St., Philadelphia 40.
Pee Cee Tape & Label Co., 521 N. LaBrea, Los Angeles 36, Calif.
Peer, Inc., 1440 Milton St., Benton Harbor, Mich.
Peerless of America, Inc., 5800 N. Pulaski Rd., Chicago 46, Ill.
Peerless Corp., 1853 Ludlow Ave., Indianapolis 7, Ind.
Peerless Heater Co., The, Div. of The Eastern Foundry Co., Boyertown, Pa.
Peerless Products Div., United Cooling Towers, Inc., 1421 E. Washington Ave., North Little Rock, Ark.
Peerless Pump Hydrodynamics Div., Food Machinery & Chemical Corp., 301 West Ave. 26, Los Angeles 31, Calif.
Penberthy Mfg. Co., Div. of Buffalo Eclipse Corp., 1242 Holden Ave., Detroit 3, Mich.
Penn Boiler Div., Pebbco Industries Inc., Lancaster, Pa.
Penn Brass & Copper Co., 3837 W. 20th St., Erie, Pa.
Penn Controls, Inc., Goshen, Ind.
Penn Galvanizing Co., 2201 E. Tioga St., Philadelphia 34, Pa.
Penn Instruments Div. of Burgess-Manning Co., 4110 Haverford Ave., Philadelphia 4, Pa.
Penn Mfg. Corp. of Washington, Pa., 380 W. Chestnut St., P. O. Box 484, Washington, Pa.
Pennsalt Chemicals Corp., Three Penn Center, Philadelphia 2, Pa.
Penn Ventilator Co., 3252 Goodman, Philadelphia 40, Pa.
Pennsylvania Engineering Co., 1107-21 N. Howard St., Philadelphia 23.
Pennsylvania Flexible Metallic Tubing Co., P. O. Box 415, Paoli, Pa.
Pennsylvania Forge, Div. of Chemetron Corp., Milnor & Bleigh Sts., Philadelphia 35, Pa.
Pennsylvania Furnace & Iron Co., Warren, Pa.

Pennsylvania Pump & Compressor Co., Easton, Pa.
Perfect Circle Corp., Hagerstown, Ind.
Perfecting Service Co., 332 Atlando Ave., Charlotte 6, N. C.
Perfection Div., Hupp Corp., 1135 Ivanhoe Rd., Cleveland 10, O.
Perfex Plastics, Inc., 2632 S. Dearborn, Chicago, Ill.
Perkins & Son, Inc., B. F., Chicopee St., Holyoke, Mass
Permacel, New Brunswick, N. J.
Permatex Co., Inc., 300 Broadway, Huntington Sta., Long Island, N. Y.
Permatron Corp., 4840 N. Linder Ave., Chicago 30, Ill.
Permutit Co., The, Div. of Pfaudler Permutit, Inc., 50 W. 44th St.. New York 36, N. Y.
Perolin Co., Inc., The, 350 Fifth Ave., New York 1, N. Y.
Pesco Products Div., Borg-Warner Corp., 24700 N. Miles Rd., Bedford, O.
Peters Co., The, Div. of Toledo Paint & Chemical Co., 33 Blucher St., Toledo, O.
Petersen Mfg. Co., DeWitt, Nebr.
Petro, 3170 W. 106th St., Cleveland 11, O.
Petroleum Solvents Corp., 9 East 45 St., New York 17, N. Y.
Petrometer Corp., 43-22 Tenth St., Long Island City 1, N. Y.
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22.
Phelps Fan Mfg. Co., 715 Thomas St., Little Rock, Ark.
Pheoll Mfg. Co., Inc., 5700 Roosevelt Rd., Chicago 50, Ill.
Philadelphia Gear Corp., King of Prussia, Pa.
Philadelphia Hoist Div., Industrial Enterprises, Inc., Doyle & N. Hamilton Sts., Doylestown, Pa.
Philadelphia Pipe Bending Co., 4135-65 N. Fifth St., Philadelphia 40.
Philadelphia Thermometer Co., 6th & Cayuga St., Philadelphia 40, Pa.
Philco Corp., Tioga & C Sts., Philadelphia 34, Pa.
Philips Electronics, Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Phillips & Co., H. A., 3255 W. Carroll Ave., Chicago 24, Ill.
Phillips Cooling Tower Co., Inc., 220 Dupont St., Brooklyn 22, N. Y.
Phillips Drill Co., U. S. No. 12 & Liberty Trail, Michigan City, Ind.
Phillips Impact Swedging Tool Co., 1237 N. E. 125th St., North Miami, Fla.
Phoenix Brass Fittings Corp., 354-378 Coit St., Irvington 11, N. J.
Phoenix Mfg. Co., Joliet, Ill.
Phoenix Mfg. Co., Div. Union Tank Car Co., Front & Chapel Sts., Catasauqua, Pa.
Phoenix Products Co., 4715 N. 27th St., Milwaukee 16, Wis.
Phoenix Steel Corp., Phoenix Steel Tube Div., 121 Bridge St., Phoenixville, Pa.
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
Photomation, Inc., 96 S. Washington Ave., Bergenfield, N. J.
Pick Mfg. Co., West Bend, Wis.
Picker X-Ray Co., 25 S. Broadway, White Plains, N. Y.
Pickett & Eckel, Inc., 1109 S. Fremont, Alhambra, Calif.
Pierce Co., Wm. B., The, 277 Military Rd., Buffalo 7, N. Y.
Piezo Mfg. Corp., 250 Arlington Ave., Staten Island, N. Y.
Pilley Brush Co., Fort Madison, Ia.
Pilot Mfg. Co., P. O. Box 2127, 20433 Earl St., Torrance, Calif.
Pines Engineering Co., Inc., 685 Walnut St., Aurora, Ill.
Pioneer Mfg. Co., 3131 San Fernando Rd., Los Angeles 65, Calif.
Pioneer Tool Co., 905 Ninth St., Racine, Wis.
Pipeline Coatings & Engineering Co., 5501 Santa Fe Ave., Los Angeles 58, Calif.
Pipe Line Development Co., 5700 Detroit Ave., Cleveland 2, O.
Pipe Plugs, Inc., Wellington, O.
Piper Industries, Inc., 15930 Common Rd., P. O. Box 456, Roseville, Mich.
Piping Specialties, Inc., 114 Liberty St., New York 6, N. Y.
Pi Tape, P. O. Box 397, Lemon Grove, Calif.
Pittsburgh Brass Mfg. Co., 3155 Penn Ave., Pittsburgh 1, Pa.
Pittsburgh Coke & Chemical Co., Grant Bldg., Pittsburgh, Pa.
Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa.
Pittsburgh Lectrodryer Div., McGraw-Edison Co., 327 32nd St., Pittsburgh 30, Pa.
Pittsburgh Nipple Wks., Inc., 1455 Spring Garden Ave., Pittsburgh 12.
Pittsburgh Pipe & Coupling Co., Allison Park, Pa.
Pittsburgh Piping & Equipment Co., 158 49th St., Pittsburgh 1, Pa.
Pittsburgh Plate Glass Co., 632 Ft. Duquesne Blvd., Pittsburgh 22, Pa.
Pittsburgh Standard Products Co., Verona, Pa.
Pittsburgh Steel Co., P. O. Box 118, Dept. H, Pittsburgh 30, Pa.
Pittsburgh Tube Co., 212 Wood St., Pittsburgh 22, Pa.
Pittsburgh Valve Co., Reedsville, W. Va.
Pittsfield Products, Inc., 2275 Platt Rd., Ann Arbor, Mich.
Plant Engineering & Equipment Co., 110-120 Burnett St., Elizabeth, N. J.
Plant Equipment Div., General Blower Co., Inc., 6412 Girard Ave., Philadelphia 31, Pa.
Plasteel Products Corp., McAdam Ave., Washington, Pa.
Plastergon Wall Board Co., Philadelphia Ave., Buffalo 7, N. Y.
Plastex Co., 3232 Cleveland Ave., Columbus 24, O.
Plastic Products Co., 6467 Georgia Ave., Detroit 11, Mich.
Plastics Div., Eastman Chemical Products, Inc., Kingsport, Tenn.
Plasti-Foam Corp., 77 River St., Hoboken, N. J.
Plastiline, Inc., P. O. Box 2023, 1251 N. E. 48th St., Pompano Beach, Fla.
Plastipipe, Products of Plastic Process Co., Div. of Monadnock Mills, 11200 Hindry Ave., Los Angeles 45, Calif.
Plibrico Co., 1800 Kingsbury St., Chicago 14, Ill.
Plicoflex, Inc., 5501 Santa Fe Ave., Los Angeles 58, Calif.
Plummer Mfg. Co., W. A., 752 So. San Pedro St., Los Angeles 14, Calif.
Plummer Spray Equipment Co., 700 Filmore St., Napoleon, O.
Poe Co., C. W., The, 10526 Wilbur Ave., Cleveland 6, O.
Pokorney Mfg. Co., 10148 Pacific Ave., Franklin Park, Ill.
Pollen Ex Co., 307 W. Monroe St., Chicago 6, Ill.
Polygon Plastic Co., Walkerton, Ind.
Polymer Corp., The, 2120 Fairmont Ave., Reading, Pa.
Poole Foundry & Machine Co., 1700 Union Ave., Woodberry, Baltimore 11, Md.
Porce-Lin Tank Lining Co., 14630 Harper, Detroit, Mich.
Porous Plastic Filter Co., Inc., Glen Cove, N. Y.
Portable Electric Tools, Inc., 1200 E. State St., Geneva, Ill.
Port City Machine & Tool Co., 3590 Airline Rd., Muskegon, Mich.
Porter-Cable Machine Co., 700 Marcellus St., Syracuse 4, N. Y.
Porter Co., Inc., H. K., Forge & Fittings Div., W-S Fittings Wks., Aldene Rd., P. O. Box 95, Roselle, N. J.
Porter Co., Inc., H. K., Peerless Electric Div., 1401 W. Market St., Warren, O.
Porter Co., Inc., H. K., Thermoid Div., Tacony & Comly Sts., Philadelphia 24, Pa.
Porter & Co., Inc., H. W., 825 Frelinghuysen Ave., Newark 12, N. J.
Porter Co., R. C., 8327 Newbury Rd., Cincinnati 42, O.
Portland Copper & Tank Works, Inc., 80 Second St., South Portland, Me.
Portmar Boiler Co., Inc., 193 Seventh St., Brooklyn 15, N. Y.
Posen & Kline Tube Co., Whitehall Rd., Norristown, Pa.
Potter & Brumfield, Princeton, Ind.
Potter Company, The, 1950 Sheridan Rd., North Chicago, Ill.
Potts-Farrington Co., 4250 Wissahickon Ave., Philadelphia 29, Pa.
Powell Co., Wm., The, 2525 Spring Grove Ave., Cincinnati 22, O.
Power Cleaning Equipment Corp., 102 N. Main St., Payne, O.
Power Engineering Corp., 2504 Commercial, Mingo Jct., O.
Power-Flame Division Inc., Grandview, Mo.
Power Line Fan Co., Inc., Subsidiary of Chelsea Products, Inc., 639 S. Ave., Plainfield, N. J.
Power Strut, Inc., 13 Claflin St., Framingham, Mass.
Powers Regulator Co., 3459 Oakton St., Skokie 6, Ill.
Pratt Co., Henry, 319 W. Van Buren St., Chicago, Ill.
Pratt & Whitney Aircraft Div., United Aircraft Corp., E. Hartford, Conn.
Precision Fan Blade Mfg. Co., Div. of Warrington Co., 4871 San Fernando Rd., West, Los Angeles 39, Calif.
Precision Parts Corp., 400 N. First St., Nashville 7, Tenn.
Precision Thermometer & Instrument Co., 1434 Brandywine St., Philadelphia 30, Pa.
Precision Welder Mfg. Co., 2218 W. Lake St., Chicago 12, Ill.
Preferred Utilities Mfg. Corp., 41 E. 42 St., New York 17, N. Y.
Preis Engraving Machine Co., H. P., 661 U. S. Highway #22, Hillside, N. J.
Premier Co., 755 Woodlawn Ave., St. Paul 1, Minn.
Prepo Corp., Edgerton, Wis.
Presstite Div., American-Marietta Co., 3900 Chouteau Ave., St. Louis 10, Mo.
Pressure Airduct Corp., 8130 N. St. Louis, Skokie, Ill.
Price Brothers, E. Monument Ave., Dayton, O.
Price Pump Co., E. L., Box 357, Sonoma, Calif.
Price & Rutzebeck, P. O. Box 30, Hayward, Calif.
Prier Brass Mfg. Co., 7801 Truman Rd., Kansas City 22, Mo.
Pritchard & Co. of California, J. F., 4625 Roanoke Parkway, Kansas City 12, Mo.
Process Engineering, Inc., Foot of Chase St., Methuen. Mass.
Process Solvent Co., 1040 Chelsea Traffic Way, Kansas City, Kans.
Procon Pump & Engineering Co., 12721 Capital Ave., Oak Park 37, Mich.
Proctor & Schwartz, Inc., 7th St. and Tabor Rd., Philadelphia 20, Pa.
Product Engineering, 9703 South West Highway, Oak Lawn, Ill.
Production Stamping Co., 2316 S. 24th St., Omaha. Nebr.
Producto Electric Corp., 932 Rogers Pl., New York, N.Y.
Products Research Co., 2919 Empire Ave., Burbank, Calif.
Propellair Div., Robbins & Myers Inc., 1345 Lagonda Ave., Springfield, O.
Protection Controls, Inc., 7317 N. Lawndale Ave., Skokie, Ill.
Protective Closures Co., Inc., Caplugs Div., 2207 Elmwood Ave., Buffalo 22, N. Y.
Protokap, Inc., 625 West Building, Houston, Tex.
Proto Tool Co., Div. of Pendleton Tool Industries, Inc., 2209 Santa Fe Ave., Los Angeles, Calif.
Prox Company, Inc., Frank, 1201 S. First St., Terre Haute, Ind.
Pudlo Liquid Filters, Inc., New Holstein, Wis.
Puhl & Hepper Mfg. Co., Inc., 6400 W. Florissant Ave., St. Louis 20.
Pullman Vacuum Cleaner Co., 25 Buick St., Boston 15, Mass.
Pulverizing Machinery Div., Metals Disintegrating Co., Inc., 96 Chatham Rd., Summit, N. J.
Punch-Lok Co., 321 N. Justine St., Chicago 7, Ill.
Pure Carbonic Co., Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.
Puritron Corp., 15 Stiles St., New Haven, Conn.
Purolator Products, Inc., 970 New Brunswick Ave., Rahway, N. J.
Pyle-National Co., The, 1373 N. Kostner Ave., Chicago 51, Ill.
Pyott Foundry & Machine Co., 140 Stone St., Aurora, Ill.
Pyramid Industries, Inc., 1422 Irwin Dr., Erie, Pa.
Pyramid Instrument Corp., 630 Merrick Rd., Lynbrook, Long Island, N. Y.
Pyramid Plastics, Inc., 554 W. Polk St., Chicago, Ill.
Pyrodyne, Inc., 11973 San Vicente Blvd., Los Angeles 49, Calif.
Pyrolite Products Co., 1221-1231 W. 74th St., Cleveland 2, O.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.

Q

Q-P Mfg. Co., Needham Heights, Mass.
Quaid Fabrications, Inc., State Highway 73, Palmyra, N. J.
Quaker City Iron Wks., Allegheny & Tulip St., Philadelphia 34, Pa.
Quality Specialty Co., Inc., 28th & Lincoln Ave., Camden 5, N. J.
Quelcor, Inc., P.O. Box 29, Chester, Pa.
Queen City Engineering Co., Old Pineville Rd., P. O. Box 11251, Charlotte 9, N.C.
Queen City Valves Inc., 1203 Findlay, Cincinnati, O.

Quickdraft Co., Dueber-Hampden Bldg., P. O. Box 87-K, Canton, O.
Quick Plastics, 1680 Cooper St., Jackson, Mich.
Quickwork Div., Whiting Corp., Harvey, Ill.
Quiet Automatic Oil Burners Corp., 33 Bloomfield Ave., Newark 4, N. J.
Quigley Co., Inc., 415 Madison Ave., New York 17, N. Y.

R

RBM Controls Div., Essex Wire Corp., Logansport, Ind.
R C S Tool Corp., 227-229 East Front St., P. O. Box 661, Bloomington Ill.
R. I. Humidifier & Ventilating Co., Inc., 65 Lansdowne St., Cambridge 39, Mass.
RKL Controls, Inc., Hainesport Industrial Park, Hainesport, N.J.
R-P & C Valve Div., American Chain & Cable Co., Inc., Reading Pa.
R & R Metal Products, Inc., 11622 S. Western Ave., Chicago 43, Ill.
Radex Corp., 2076 N. Elston Ave., Chicago 14, Ill.
Radiant Electric Heat Co., P. O. Box 488, 1222 So. 18th St., Centerville, Ia.
Radiant Heat & Cooling Co., 795 Kifer Rd., Santa Clara, Calif.
Radiant-Ray Radiation, Inc., 464 Hartford Ave., Newington, Conn.
Radiant Utilities Corp., 8817-18th Ave., Brooklyn 14, N. Y.
Radiator Specialty Co., 1700-1900 Dowd Rd., Charlotte 1, N. C.
Radio Corp. of America, RCA Victor Div., Front & Cooper, Camden, N. J.
Radio Corp. of America, Industrial Electronic Products, Camden, N. J.
Raisler Corp., Grimes Sprinkler Div., 750 Third Ave., New York 17
Ramco Equipment Corp., Div. of Randall Mfg. Co., Inc., 801 Edgewater Rd., New York 59, N.Y.
Ramco Mfg. and Engineering Co., 5413 N. E. Columbia Blvd., Portland Ore.
Ramick Inc., 3031 Industrial Blvd., Bethel Park, Pa.
Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., 289 Winchester Ave., New Haven 4, Conn.
Ramsey Products Corp., 75 State St., Room 705, Albany, N.Y.
Ramtite Co., The, 2563 W 18th St., Chicago 8, Ill.
Ranco Incorporated, 601 W. 5th Ave., Columbus 1, O.
Randall Graphite Bearings, Inc., Greenlawn & Lake Sts., Lima, O.
Randolph-Page, Inc., 175 Fifth Ave., New York 10, N. Y.
Ransburg Electro-Coating Corp., P. O. Box 23122, Indianapolis 23, Ind.
Ransome Torch & Burner Co., 4030 Hollis St., Emeryville, Calif.
Ra-Rich Mfg. Corp., Holtsville, Long Island, N. Y.
Rauh & Associates, Inc., Cornelius A., 1191 Sunset View Dr., Akron 13, O.
Ravena Iron Co., Ravena, N. Y.
Rawlplug Co., Inc., The, 200 Petersville Rd., New Rochelle, N. Y.
Ray Oil Burner Co., 1301 San Jose Ave., San Francisco 12, Calif.
Raybestos-Manhattan, Inc., 61 Willett St., Passaic, N. J.
Rayfield-Staffco Burner Co., 2066 Canalport, Chicago 8, Ill.
Raymanco Mfg. Co., 118 West Rose St., Owatonna, Minn.
Raypak Co., Inc., 2416 Chico Ave., El Monte, Calif.
Reading Tube Corp., 350 - 5th Ave., New York, N. Y.
Ready-Power Co., The, 11231 Freud Ave., Detroit 14, Mich.
Reco Products Div., Recony Corp., 150 Nassau St., New York 38.
Recold Corp., 7250 E. Slauson Ave., Los Angeles 22, Calif.
Recoy Div. of Schemenauer Mfg. Corp., Holland, O.
Rector Mineral Trading Corp., 551 Fifth Ave., New York 17, N. Y.
Rectorseal Div., Rector Well Equipment Co., 2215 Commerce St. Houston 2, Tex.
Red Jacket Co., Inc., 513 Bell Ave., Carnegie, Pa.
Red Jacket Mfg. Co., Box 270, Davenport, Ia.
Red Spot Electric Co., 7405 S. Tacoma Way, Tacoma 9, Wash.
Redi-Bolt, Inc., 5334 Indianapolis Blvd., East Chicago, Ind.
Redmanson Corp., 630 Loucks Mill Rd., York, Pa.
Redmond Co., Inc., Owosso, Mich.
Reed Mfg. Co., 1425 W. 8th St., Erie, Pa.
Reed Unit-Fans, Inc., 501 N. St. Patrick St., New Orleans 19, La.
Reeves Pulley Co., Div. of Reliance Electric & Engineering Co., Columbus, Ind.
Reeves Steel & Mfg. Co., Div. of Empire-Reeves Steel Corp., Dover, O.
Reflectal Corp., Subsid., Borg-Warner Corp., 200 S. Michigan Ave., Chicago 4, Ill.
Reflin Co., 5660 Kearney Villa Rd., San Diego 11, Calif.
Refractory & Insulation Corp., 120 Wall St., New York 5, N. Y.
Refrigerating Specialties Co., 3004 W. Lexington St., Chicago 12, Ill.
Refrigeration Appliances, Inc., 917-923 W. Lake St., Chicago, Ill.
Refrigeration Devices Co., 51 E. Centre St., Nutley 10, N. J.
Refrigeration Research, Inc., 525 N. Fifth St., Brighton, Mich.
Rega Mfg. Co., 79 Mt. Hope Ave., Rochester 20, N. Y.
Regent Engineering Co., 336 Potter Rd., Wood Dale, Ill.
Register & Grille Mfg. Co., Inc., 698 Manhattan Ave., Brooklyn 22.
Reichert Float & Mfg. Co., 2242 Smead Ave., Toledo 6, O.
Reid Controls, Inc., 2021 N. Lincoln, Burbank, Calif.
Reif-Rexoil, Inc., 37-41 Carroll St., Buffalo 3, N. Y.
Reihhold Chemicals, Inc., 525 N. Broadway, White Plains, N.Y.
Reilly Tar & Chemical Corp., 1615 Merchants Bank Bldg., Indianapolis 4, Ind.
Reiner & Campbell Co., Inc., 19 Euclid Ave., P. O. Box 5035, Newark 5, N. J.
Reintjes Co., Geo. P., 2517-19 Jefferson St., Kansas City, Mo.
Reliable Products Mfg. Co., Inc., 123 DeKalb Ave., Brooklyn 17, N. Y.
Reliance Automatic Lighting Co., 1929 Mead St., Racine, Wis.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17.
Reliance Gauge Column Co., 5902 Carnegie Ave., Cleveland 3, O.
Reliance Instrument Mfg. Corp., 190 Glen Cove Ave., Glen Cove, Long Island, N. Y.
Reliance Refrigerating Machine Co., 3401 N. Kedzie Ave., Chicago, Ill.
Relton Corp., 99 N. Lotus Ave., P. O. Box 5546, Pasadena, Calif.

Remco, Inc., Zelienople, Pa.
Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.
Remington Arms Co., Inc., 939 Barnum Ave., Bridgeport 2, Conn.
Rempe Co., 342 N. Sacramento Blvd., Chicago 12, Ill.
Rentip, Inc., R.R. No. 4, Osborne Rd., Knoxville, Tenn.
Reproduction Engineering Corp., Essex, Conn.
Republic Appliance Div., Republic-Transcon Industries, Inc., Union Bank Center, Beverly Hills, Calif.
Republic Flow Meters Co., Subsid. of Rockwell Mfg. Co., 2240 Diversey Pkwy., Chicago 47, Ill.
Republic Mfg. Co., 15655 Brookpark Rd., Cleveland 35, O.
Republic Products Co., 7420 State Rd., Philadelphia 36, Pa.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown 1, O.
Republic Steel Corp., Republic Bldg., Cleveland 1, O.
Research Appliance Co., Rt. 8 at Craighead Rd., Box 307, Allison Park, Pa.
Research-Cottrell, Inc., Bound Brook, N.J.
Research Products Corp., 1015 E. Washington Ave., Madison 1, Wis.
Research Publishing Co., P.O. Box 42004, Los Angeles 42, Calif.
Research Vacuum Supply Co., 6712 N. Clark St., Chicago 26, Ill.
Resisto Pipe & Valve Co., 262 Bridge St., East Cambridge, Mass.
Resistoflex Corp., Roseland, N. J.
Resolite Corp., Zelienople, Pa.
Reuland Electric Co., 3001 W. Mission Rd., Alhambra, Calif.
Revcor Inc., Carpentersville, Ill.
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Revere Copper & Brass, Inc., Foil Div., 196 Diamond St., Brooklyn 22.
Rexarc, Inc., P. O. Box 47, W. Alexandria, O.
Rex Clay Products Co., 1109 Decker Rd., Walled Lake, Mich.
Rex Welder Company, 1200-1248 Milton St., Benton Harbor, Mich.
Reynolds Electric Co., 3000 River Rd., River Grove, Ill.
Reynolds Mfg. Co., The, Box 333, Comstock Park, Mich.
Reynolds Metals Co., P. O. Box 2346, Richmond 18, Va.
Reynolds Ventilator Mfg. Corp., 7530 N. Sheridan Rd., Chicago 26, Ill.
Reynolds Water Conditioning Co., 12100 Cloverdale Ave., Detroit 4.
Reznor Mfg. Co., 51 Union St., Mercer 8, Pa.
Rheem Mfg. Co., 7600 Kedzie Ave., Chicago 52, Ill.
Rhoads Engineering Corp., 9063 Washington Blvd., Culver City, Calif.
Rhoads & Sons, J. E., 2100 W. 11th St., Wilmington 99, Del.
Rhode Island Fittings Co., 355 Dexter St., Providence 7, R. I.
Rhodes, Inc., M. H., 30 Bartholomew Ave., Hartford, Conn.
Rhopac, Inc., 3425 Cleveland St., Skokie, Ill.
Rich Mfg. Co. of California, 3851 Santa Fe Ave., Los Angeles 58, Calif.
Richkraft Co., 510 N. Dearborn, Chicago, Ill.
Richmond Engineering Co., 7th and Hospital Sts., Richmond, Va.
Richmond Plumbing Fixtures Div., Rheem Mfg. Co., Box 111, Metuchen, N. J.
Richmont, Inc., 922 S. Myrtle Ave., Monrovia, Calif.
Richo Plastic Co., 4445 West Fullerton Ave., Chicago 39, Ill.
Ric-wiL, Inc., Barberton, O.
Ridge Tool Co., Clark St., Elyria, O.
Riggio Co., Inc., Frank D., State Highway 17, Rutherford, N. J.
Rigidbilt Inc., 9240 Belmont Ave., Franklin Park, Ill.
Rigidized Metals Corp., 721 Ohio St., Buffalo 3, N. Y.
Riley Stoker Corp., 9 Neponset St., Worcester 6, Mass.
RINCO, P. O. Box 453, Altadena, Calif.
Rinehart Inc., 511-513 Main St., Richmond, Ind.
Ripley Co., Inc., Middletown, Conn.
Rite Engineering & Mfg. Corp., 9441 Washburn Crossing Rd., Downey, Calif.
Ritter Pattern & Casting Co., Inc., 120 Walker St., New York 13, N. Y.
Rittling Corp., The, Rittling Bldg., Buffalo 5, N. Y.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, O.
Roberson, Inc., 1539 E. 103rd St., Seattle 55, Wash.
Robert Mfg. Co., 9035 Venice Blvd., Los Angeles 34, Calif.
Roberts Co., C. A., 2401 25th Ave., Franklin Park, Ill.
Roberts-Gordon Appliance Corp., 44 Central Ave., Buffalo 6, N. Y.
Roberts Tube Div., Prestyle Mfg. Co., 6100 Ranspach Ave., Detroit.
Robertson Co., H. H., 2400 Farmers Bank Bldg., Pittsburgh 22, Pa.
Robinair Mfg. Corp., 1224 So. East Ave., Montpelier, O.
Robinson Clay Product Co., The, 65 W. State St., Akron 9, O.
Robinson Industries, Coleman, Mich.
Robinson Technical Products, Inc., Teterboro Air Terminal, Teterboro, N.J.
Robinson Ventilating Co., 155 Henderson St., Zelienople, Pa.
Robvon Backing Ring Co., 675 Garden St., Elizabeth 2, N. J.
Rochester Lead Works, Inc., 380 Exchange St., Rochester 8, N. Y.
Rochester Mfg. Co., Inc., 63 Rockwood St., Rochester 10, N. Y.
Rock Island Register Co., 2435 Fifth Ave., Rock Island, Ill.
Rockford Brass Works, 700 S. Main, Rockford, Ill.
Rockford Screw Products Co., 2501 Ninth St., Rockford, Ill.
Rockwell Co., W. S., 2700 Eliot St., Fairfield, Conn.
Rockwell Mfg. Co., Meter & Valve Div., 400 N. Lexington Ave., Pittsburgh 8, Pa.
Rockwood Sprinkler Co., 38 Harlow St., Worcester 5, Mass.
Roddick Tool Co., P. O. Box 109, Anaheim, Calif.
Roessing Mfg. Co., 1616 Noble St., Sharpsburg, Pittsburgh 15, Pa.
Roll-Weld Pipe & Tube, Inc., 2961 Old Kings Rd., P. O. Box 1234, Jacksonville, Fla.
Roller Bearing Co. of America, Sullivan Way, West Trenton, N. J.
Rome-Turney Radiator Co., Canal St., Rome, N. Y.
Romla Co., 13101 S. Main St., Los Angeles 61, Calif.
Ronningen-Petter Co., 330 S. 27th St., Vicksburg, Mich.
Roots-Connersville Blower, Div. of Dresser Industries, Inc., 900 W. Mount St., Connersville, Ind.
Roper Hydraulics, Inc., P. O. Box 269, Commerce, Ga.
Rosebraugh Co., W. W., P. O. Box 2008, 680 17th St., S. E., Salem, Ore.

Ross Engineering Div., J. O., Midland-Ross Corp., 730 Third Ave., New York 17, N. Y.
Ross Sprinkler Co., 4333 Temple City Blvd., Rosemead, Calif.
Ross Valve Mfg. Co., Inc., 6 Oakwood Ave., Troy, N. Y.
Rotary Concrete Drill Co., 650 S. Arroyo Pkwy., Pasadena, Calif.
Rotary Seal Div., Muskegon Piston Ring Co., Sparta, Mich.
Roth Co., Roy E., 2420-A 24th Ave., Rock Island, Ill.
Rotherm Engineering Co., Inc., 7280 W. Devon, Chicago, Ill.
Rotometals, 980 Harrison St., San Francisco 7, Calif.
Rotor Tool Co., 26300 Lakeland Blvd., Cleveland 32, O.
Rotron Controls Corp., Woodstock, N. Y.
Round Oak Div., Peerless Corp., Dowagiac, Mich.
Royalton Co., Inc., Gasport, N. Y.
Royco Instruments, 440 Olive St., Palo Alto, Calif.
Royersford Foundry & Machine Co., Inc., 101-131 Main St., Royersford, Pa.
Royse Mfg. Co., 4740 Vicksburg, Dallas 12, Tex.
Rubatex Div., Great American Industries, Inc., Bedford, Va.
Rubber & Asbestos Corp., 225 Belleville Ave., Bloomfield, N. J.
Rubber & Plastics Compound Co., Time & Life Bldg., Rockefeller Center, New York 20, N. Y.
Ruberoid Co., 500 Fifth Ave., New York 36, N. Y.
Ruby Chemical Co., 68-70 McDowell St., P. O. Box 1108, Columbus 16, O.
Ruemelin Mfg. Co., 3860 N. Palmer St., Milwaukee 12, Wis.
Ruggles-Klingemann Mfg. Co., 110 Tremont St., Boston, Mass.
Ruppright's Rotary Roof Cooler, Box 43555, Los Angeles 43, Calif.
Rusco, A Div. of the F. C. Russell Co., Box 387, Pandora, O.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Rusticide Products Co., 3125 Perkins Ave., Cleveland 14, O.
Rust-Oleum Corp., 2425 Oakton St., Evanston, Ill.
Ruthman Machinery Co., 1809 Reading Rd., Cincinnati 2, O.
Rutland Fire Clay Co., Curtis Ave., Rutland, Vt.
Ruud Mfg. Co., Kalamazoo, Mich.
Ryerson & Son, Inc., Joseph T., 2558 W. 16th, Chicago, Ill.

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S&C Mfg. Co., 3533 Cardiff Ave., Cincinnati 9, O.
SKF Industries, Inc., Front St. & Erie Ave., Philadelphia 32, Pa.
S.O.S. Products Co., Inc., 346 Cumberland St., Brooklyn 38, N. Y.
Sac Tool Mfg. Co., 1913 Washington Ave., St. Louis 3, Mo.
Safety Electrical Equipment Corp., 1187 Dixwell Ave., New Haven 14, Conn.
St. Clair Rubber Co., 440 E. Jefferson, Detroit, Mich.
St. Louis Blow Pipe & Heater Co., Div. of Young Sales Corp., 1948 N. 9th St., St. Louis 6.
St. Louis Tool Co., 6100 Prescott St., St. Louis 15, Mo.
St. Pierre Chain Corp., 50 Frank St., Worcester, Mass.
Sales Div., Murray W., 801 W. Baltimore Ave., Detroit 2, Mich.
Salina Metal Products Co., 9th and Bishop, Salina, Kan.
Sall Bros. Co., 2320 Kishwaukee St., Rockford, Ill.
Salsbury Corp., 1161 E. Florence Ave., Los Angeles 1, Calif.
Salton Mfg. Co., Inc., 519 E. 72nd St., New York 21, N. Y.
Sampson Scientific Co., Div. of the Sampson Chemical & Pigment Corp., 2830 W. Lake St., Chicago 12, Ill.
Samson Drill Co., 443 E. Tremont St., Bronx, N.Y.
San Angelo Foundry & Machine Co., P. O. Box 1152, San Angelo, Tex.
Sandee Mfg. Co., 735 S. Karlov, Chicago, Ill.
Sandstrom Products Co., Port Byron, Ill.
Sangamo Electric Co., 1301 N. 11th St., Springfield, Ill.
Santa Ana Plastics Div., Rexall Drug & Chemical Corp., 404 W. Central Ave., Santa Ana, Calif.
Saran Lined Pipe Co., 2415 Burdette Ave., Ferndale 20, Mich.
Sarco Co., Inc., 635 Madison Ave., New York 22, N. Y.
Sarcotherm Controls, Inc., 635 Madison Ave., New York 22, N. Y.
Sargent Enginairing Co., 1375 E. 45th St., Cleveland 3, O.
Sauereisen Cements Co., 1045 North Canal St., Pittsburgh 15, Pa.
Saunders Mfg. Co., 25 Atherton St., Yonkers, N. Y.
Saussé & Co., M. W., 636 N. Robertson Blvd., Los Angeles 46, Calif.
Saverite Engineering Co., 158 - 14th St., Hoboken, N. J.
Sawhill Tubular Products, Inc., P. O. Box 11, Sharon, Pa.
Scaico Controls Inc., P. O. Box 41, Cooper St., Delanco, N. J.
Scam Instrument Corp., 3101 N. Lowell Ave., Chicago 41, Ill.
Schade Valve Mfg. Co., 2527 N. Bodine St., Philadelphia 33, Pa.
Schaevitz Engineering, P. O. Box 505, Camden 1, N. J.
Schaible Co., The, 5801 Mariemont Ave., Mariemont 27, O.
Scharf Mfg. Co., J. H., 6120 Binney St., Omaha, Nebr.
Schatz Mfg. Co., The, Fairview, Poughkeepsie, N. Y.
Schaub Engineering Co., Fred H., 5300 Belmont Rd., Downers Grove, Ill.
Schaul Mfg. Co., 6300 Roland Ave., Cleveland 27, O.
Schemenauer Mfg. Corp., Holland, O.
Schick Products, Inc., P. O. Box 867, Belmont, Calif.
Schieren Co., Chas. A., 1300 Walnut St., Camden 3, N. J.
Schild Mfg. Co., P. O. Box 412, Beaver Dam, Wis.
Schlegel Mfg. Co., 1555 Jefferson Rd., P. O. Box 197, Rochester 1, N. Y.
Schmieg Industries, Inc., P. O. Box 4701, Detroit 34, Mich.
Schnacke, Inc., 1101 N. Governor St., Evansville, Ind.
Schneible Co., Claude B., P. O. Box 296, Roosevelt Pk. Annex, Detroit 32, Mich.
Schneider Mfg. Co., 2 Linden St., Reading, Mass.
Schoedinger, Inc., F. O., 322-358 Mt. Vernon Ave., Columbus 16, O.
Schramm, Inc., West Chester, Pa.
Schroeder Brothers Corp., Nichol Ave., P. O. Box 72, McKees Rocks, Pa.
Schurs Burner & Equipment, Inc., 8956 S. Atlantic Ave., South Gate, Calif.
Schutte and Koerting Co., Cornwells Heights, Bucks County, Pa.
Schwartz Chemical Co., Inc., 50-01 2nd St., Long Island City 1, N. Y.
Schwitzer Corp., 1125 Massachusetts Ave., Indianapolis 7, Ind.
Sciaky Bros. Inc., 4915 W. 67th St., Chicago 38, Ill.
Sci-eff-ec Labs., 411 Climax, Chagrin Falls, O.
Scientific Instrument Co., 617 Howard St., Detroit 26, Mich.
Scot Pump Co., P. O. Box 68, Thiensville, Wis.
Scott, Inc., H. H., Inst. Div., 111 Powder Mill Rd., Maynard, Mass.
Scott Paper Co., Foam Div., Chester, Pa.
Scott Valve Mfg. Co., 3963 McKinley Ave., Detroit 8, Mich.
Scovill Mfg. Co., 99 Mill St., Waterbury 20, Conn.
Scully Signal Co., 174 Green St., Melrose 76, Mass.
Sealed Power Corp., 2001 Sanford St., Muskegon, Mich.
Sealed Unit Parts Co., Inc., 1178 E. 180th St., New York 60, N. Y.
Sealmaster Bearings, Div. of Stephens-Adamson Mfg. Co., 47 Ridgeway Ave., Aurora, Ill.
Sealol, Inc., Warwick Industrial Park, Providence 5, R. I.
Seamless Rubber Co., The, Industrial Tape Div., 464 Congress Ave., New Haven 3, Conn.
Seamlex Co., Inc., 41-23 24th St., Long Island City 1, N. Y.
Seamon Snap Valve Co., Jct. Rt. 9 & 30, Boston & Worcester Turnpike, Westboro, Mass.
Security Valves Corp., 909 El Centro, South Pasadena, Calif.
Seelye Craftsmen, Inc., 984 Central Ave., Minneapolis 13, Minn.
Seiberling Rubber Co., Plastics Div., Newcomerstown, O.
Selas Corp. of America, Dresher 5, Pa.
SelecTemp Div., Iron Fireman Mfg. Co., 3170 W. 106th St., Cleveland 11, O.
Self Cleaning Strainer Co., 4545 Southwest Highway, Oak Lawn, Ill.
Sellers Engineering Co., 4874-76 N. Clark St., Chicago 40, Ill.
Sellers Injector Corp., 1606 Hamilton St., Philadelphia 30, Pa.
Senna Mfg. Co., 732 N. Napa St., Spokane 24, Wash.
Senrac Industries, Applegate Rd., Madison, Wis.
Serdex, Inc., 12 Bowdoin Square, Boston 14, Mass.
Serfass Corp., 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Service Bureau Corp., The, 425 Park Ave., New York, N.Y.
Sethco Mfg. Corp., 2284 Babylon Turnpike, Merrick, N. Y.
Seton Name Plate Co., Inc., 50-B Fitch St., New Haven 15, Conn.
Sette Products Co., 1241 High St., Oakland 1, Calif.
Sexauer Mfg. Co., Inc., J. A., Dept. 19, 2503-05 3rd Ave., New York 51, N. Y.
Shafer Bearing, Div. of Chain Belt Co., P. O. Box 57, Curtiss & Belmont, Downers Grove, Ill.
Shahmoon Industries, Inc., Warren Foundry & Pipe Div., 55 Liberty St., New York 5, N. Y.
Shakeproof Div., Illinois Tool Wks., St. Charles Rd., Elgin, Ill.
Shallcross Controls, Inc., P. O. Box 497, Markesan, Wis.
Shank Co., Cyrus, 4646 W. 12th Pl., Chicago 50, Ill.
Sharon Steel Corp., Sharon, Pa.
Shaw Co., Benjamin F., Second & Lombard Sts., Wilmington 99, Del.
Shaw-Kendall Engineering Co., 128 S. Superior St., Toledo 4, O.
Shaw-Perkins Mfg. Co., 201 E. Carson St., Pittsburgh 19, Pa.
Sheldon & Co., Inc., M. L., 350 Lexington Ave., New York 16, N. Y.
Sheldon Equipment Co., E. H., 716 Nims St., Muskegon, Mich.
Shell Oil Co. Lubricants Dept., 41-70 Main St., Flushing 55, N. Y.
Shenango Refractories, Box 120, New Castle, Pa.
Sherwin-Williams Co., The, 101 Prospect Ave., N. W., Cleveland, O.
Shuford Mills, Inc., Hickory, N.C.
Shurclose Seal Co., 17411 E. Warren, Detroit 24, Mich.
Shutt Process Equipment Corp., 1421 Norman Place, St. Louis 22, Mo.
Siebring Mfg. Co., George, Ia.
Sier Bath Gear & Pump Co., Inc., 9261 Hudson Blvd., North Bergen, N. J.
Signet Controls, 3205 S. E. 13th Ave., Portland 2, Ore.
Sikes Co., S. R., 1028 S. Third St., Minneapolis 15, Minn.
Silence, Inc., 130 Main St., Farmingdale, N. Y.
Silent Automatic Products, 3121 W. 106th St., Cleveland 11, O.
Silent Glow Oil Burner Co., 850 Windsor St., Hartford, Conn.
Silvercote Products, Inc., 161 E. Erie St., Chicago 11, Ill.
Silvercraft, Inc., 627 Bergman, Louisville, Ky.
Simplaire, 521 Fifth Ave., New York 17, N. Y.
Simplex Ceiling Corp., 552 W. 52nd St., New York 19, N. Y.
Simplex Mfg. Co., 198 N. Main St., Fond du Lac, Wis.
Simplex Oil Heating Corp., 7901 Oxford, Philadelphia 11, Pa.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Simpson Electric Co., 5208 W. Kinzie, Chicago, Ill.
Sims Co., 18th & Whitley Sts., Erie, Pa.
Sims Pump Valve Co., 1314 Park Ave., Hoboken, N. J.
Sinclair-Collins Valve Co., Div. of IBEC, 454 Morgan Ave., Akron 11, O.
Sioux Steel Co., P. O. Box 898, Sioux Falls, S. D.
Sipe & Co., James B., Box 8010, Pittsburgh 16, Pa.
Sirod Corp., 1263 N. 70th St., Milwaukee 13, Wis.
Skidmore Corp., P. O. Box 309, St. Joseph, Mich.
Skil Corp., 5033 Elston Ave., Chicago 30, Ill.
Skinner Co., M. B., 3502 W. Sample, South Bend 21, Ind.
Skinner Electric Valve Div., The Skinner Chuck Co., Edgewood Ave., New Britain, Conn.
Skinner Engine Co., 337 W. 12th St., Erie, Pa.
Skinner Irrigation Co., 121 E. Canal St., Troy, O.
Skuttle Mfg. Co., Milford, Mich.
Slant-Fin Radiator Corp., 130-15 89th Rd., Richmond Hill 18, N. Y.
Sloane Mfg. Co., 7606 No. Clybourn Ave., Sun Valley, Calif.
Sly Mfg. Co., W. W., 4700 Train Ave., P. O. Box 5939, Cleveland 1, O.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Smit & Sons, Inc., J. K., Murray Hill, N.J.
Smith-Blair, Inc., 535 Railroad Ave., S. San Francisco, Calif.
Smith Bros. Co., 414 S. Harvey, Oak Park, Ill.
Smith Chemical Co., E. W., 15020 E. Proctor Ave., La Puente, Calif.
Smith Co., Inc., H. B., The, 57 Main St., Westfield, Mass.
Smith Co., J. B., 3327 B St., Philadelphia 34, Pa.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Smith Corp., A. O., Electric Motor Div., 531 No. 4th St., Tipp City, O.
Smith Corp., A. O., Permaglas Div., Kankakee, Ill.

Smith Filter Corp., 1603-2nd Ave., Moline, Ill.
Smith & Kanzler Corp., E. Linden Ave., Linden, N. J.
Smith Products Co., 45240 Grand River, Novi, Mich.
Smith Twin Tubular Boiler Co., Inc., Cottman St. at State Rd., Philadelphia 35, Pa.
Smith Welding Equipment Corp., 2619 S. E. Fourth St., Minneapolis 14, Minn.
Smolensky Valve Co., 940 Broadway, Bedford, O.
Smooth-On Mfg. Co., 568-574 Communipaw Ave., Jersey City 4, N. J.
Snap-on Tools Corp., Kenosha, Wis.
Snap-Tite, Inc., 201 Titusville Rd., Union City, Pa.
Sola Electric Co., Busse Rd. at Lunt, Elk Grove, Ill.
Solar Aircraft Co., 2200 Pacific Highway, San Diego 12, Calif.
Solarflo Co., 411 So. Vermont Ave., Glendora, Calif.
Solaronics, Inc., 6th & Dinwiddle Ave., Richmond 24, Va.
Soldering Specialties Co., 19 Chatham Rd., Summit, N. J.
Solfo Paint Mfg. Co., Trenton 3, N. J.
Solvay Process Div., Allied Chemical Corp., 61 Broadway, New York 6.
Solvent Service, Inc., P. O. Box 228, Painesville, O.
Somers Corp., 6063 Wabash Ave., Detroit 8, Mich.
Somerville Iron Works, Inc., Chattanooga, Tenn.
Sonneborn Chemical & Refining Corp., Building Products Div., 404 Park Ave. So., New York 16, N. Y.
Sonner Burner Co., 412-420 E. 6th Ave., Winfield, Kans.
Sonoco Products Co., Construction Products Div., Hartsville, S. C.
Sostman & Co., H. E., 347 E. Lincoln Ave., Cranford, N. J.
Sound-Control Products Co., P. O. Box 2302, San Francisco 26, Cailf.
Sound Reduction Corp., 133 Pitkin St., East Hartford, Conn.
South Bend Air Products, Inc., 415 S. Saint Joseph St., South Bend 1, Ind.
South Chester Corp., Southco Div., Lester, Pa.
South Chester Tube Co., Finance Bldg., Philadelphia 2, Pa.
Southern Name Plate Shop, 4601 Lafaye St., New Orleans 22, La.
Southern Pipe Div. of U. S. Industries, Inc., P. O. Box C, Azusa, Calif.
Southern Plastics Co., 408 Pendleton, Columbia, S. C.
Southport Paint Co., Div. Wesson Oil & Snowdrift Co., Inc., Savannah, Ga.
Southwestern Plastic Pipe Co., P. O. Box 117, Mineral Wells, Tex.
Southworth Machine Co., 30 Warren Ave., Portland, Me.
Space-Ray Corp., 306 W. Tremont Ave., Charlotte 3, N.C.
Spanco Brass Sales, 1228 M-89 East, Allegan, Mich.
Sparkler Mfg. Co., Conroe, Tex.
Sparkler-Filtrion Corp., 24th and Commonwealth, North Chicago, Ill.
Spartan Electric Radiator Corp., 52-55 74th St., Maspeth 78, N. Y.
Spartan Tool Div., H. D. Conkey & Co., 1918 Columbia Ave., Chicago 26, Ill.
Sparton Corp., 2301 E. Michigan, Jackson, Mich.
Special Chemicals Corp., 100 S. Water St., Ossining, N. Y.
Special Screw Products, Box 391, Bedford, O.
Speco, Inc., 7308 Associate Ave., Cleveland 9, O.
Speedline Fittings Div., Horace T. Potts Co., Erie Ave. & "D" St., Philadelphia 34, Pa.
Speed Selector Inc., P. O. Box 312, Chagrin Falls, O.
Speedway Mfg. Co., Div. of Thor Power Tool Co., 1421 Barnsdale, LaGrange Park, Ill.
Speed-Seam Co., 820 N. Walcott, Chicago 22, Ill.
Spence Engineering Co., Inc.. 32 Grant St., Walden, N. Y.
Spencer Heater, Lycoming Div., Avco Corp., 652 Oliver St., Williamsport, Pa.
Spencer Turbine Co., 486 New Park Ave., Hartford 6, Conn.
Sperti Faraday, Inc., 1322 E. Church St., Adrian, Mich.
Sperti Faraday, Inc., 720 Grand St., Hoboken, N. J.
Spincraft, Inc., 4158-L W. State St., Milwaukee, Wis.
Spindler & Sons, Inc., August, Mercer St., Jersey City 2, N. J.
Spiro U.S.A., Inc., 20 N. Wacker Dr., Chicago 6, Ill.
Sponhaltz Enterprises, Inc., Sponhoist Crane Co. Div., 1007 N. W. 36th St., Oklahoma City 18, Okla.
Sporlan Valve Co., 7525 Sussex Ave., St. Louis 17, Mo.
Sprague Electric Co., Marshall St., North Adams, Mass.
Spray Engineering Co., 100 Cambridge St., Burlington, Mass.
Spraying Systems Co., 3219 Randolph St., Bellwood, Ill.
Sprayo-Flake Co., 2715 Irving Park Blvd., Chicago 18, Ill.
Springfield Boiler Co., 1901 E. Capitol Ave., Springfield, Ill.
Springload Mfg. Corp., 6332 Maynard Ave., Seattle 8, Wash.
Sprout, Waldron & Co., Inc., Muncy, Pa.
Spurgeon Co., 23501 Hoover Rd., Warren, Mich.
Square D Co., Distribution Equipment Div., 1601 Mercer Rd., Lexington, Ky.
Square D Co., Industrial Controller Div., 4041 N. Richards St., Milwaukee 12, Wis.
Squires Co., C. E., The, 18502 Syracuse Ave., Cleveland 10, O.
Stainless Processing Div., Wall Colmonoy Corp., 19345 John R St., Detroit, Mich.
Stalwart Rubber Co., The, 381 Northfield Rd., Bedford, O.
Stamco Inc., New Bremen O.
Stanat Mfg. Co., Inc., 536 Shames Dr., Westbury, N. Y.
Standard Asbestos Mfg. Co., 860 W. Evergreen Ave., Chicago 22, Ill.
Standard Electric Mfg. Co., West Berlin, N. J.
Standard Engineering Wks., 289 Roosevelt Ave., Pawtucket, R. I.
Standard Fuel Engineering Co., 667 Post Ave., S., Detroit 17, Mich.
Standard Instrument Div., Heat Timer Corp., 657 Broadway, New York 1, N. Y.
Standard Machine & Mfg. Co., 10014 Big Bend Blvd., St. Louis 22, Mo.
Standard Oil Co. of California, 225 Bush St., San Francisco, Calif.
Standard Oil Co. of Indiana, 910 S. Michigan Ave., Chicago, Ill.
Standard Oil Co. of New Jersey, 30 Rockefeller Plaza, New York, N.Y.
Standard Pressed Steel Co., Box 810, Jenkintown, Pa.
Standard Refrigeration Co., 3535 W. Fillmore St., Chicago 24, Ill.
Standard Stamping & Perforating Co., 3151 W. 49th Pl., Chicago 32, Ill.
Standard-Thompson Corp., 152 Grove St., Waltham 54, Mass.
Standard Tube Co., The, 24400 Plymouth Rd., Detroit 39, Mich.
Stanley Electric Tools Div., Stanley Works, 195 Lake St., New Britain, Conn.
Staples & Pfeiffer, 528 Bryant St., San Francisco 7, Calif.
Sta-Rite Products, Inc., 305 S. 8th St., Delavan, Wis.
Starbuck & Sons, Inc., R. M., Box 1318, Hartford 1, Conn.
Star Expansion Industries Corp., Mountainville, N. Y.
Starline Co., 119 Franklin Ave., Dayton, O.
Star Stainless Screw Co., 646 Union Blvd., Paterson 2, N. J.
Star Tubular Products Co., 4747 S. Richmond St., Chicago 32, Ill.
Steam-O-Matic Corp., 16th & Lamine St., Sedalia, Mo.
Steam Turbine Div., Worthington Corp., Wellsville, N. Y.
Stearns Co., N. C., P. O. Box 1234, Shreveport, La.
Stedco Products, 71 Lehigh St., Wilkes-Barre, Pa.
Steel City Electric Co., 1207 Columbus Ave., Pittsburgh, Pa.
Steelcote Mfg. Co., 3418 Gratiot St., St. Louis, Mo.
Steel Forgings, Inc., P. O. Box 276, Shreveport, La.
Steel Improvement & Forge Co., The, 970 E. 64th St., Cleveland 3, O.
Steffan Mfg. Corp., 1585 S. Lincoln Ave., Salem, O.
Steinen Mfg. Co., Wm., 43 Bruen St., Newark 5, N. J.
Stephens-Adamson Mfg. Co., 47 Ridgeway Ave., Aurora, Ill.
Sterlairco, Inc., 265 N. Elm St., Westfield, Mass.
Sterling, Inc., 5200 W. Clinton Ave., Milwaukee 18, Wis.
Sterling Electric Motors, Inc., Subsid. of Hathaway Instruments, Inc., 5401 Telegraph Rd., Los Angeles 22.
Sterling Engineering & Mfg. Corp., 114 Business St., Hyde Park 36, Mass.
Sterling Radiator Co., Inc., 260 N. Elm St., Westfield, Mass.
Stevens Mfg. Co., Inc., P. O. Box 1007, Mansfield, O.
Stewart-Hall Chemical Corp., 222 Washington St., Mt. Vernon, N. Y.
Stewart Ice Machine Co., 1282 W. 1st St., Pomona, Calif.
Stewart-Warner Corp., Heating & Air Conditioning Div., Lebanon, Ind
Stewart-Warner Corp., South Wind Div., 1514 Drover St., Indianapolis.
Stickle Steam Specialties Co., 2215 Valley Ave., Indianapolis 18, Ind.
Stic-Klip Mfg. Co., Inc., 112 Regent St., Cambridge 40, Mass.
Stiles Karlsonite Corp., 1550 Grand Ave., Waukegan, Ill.
Stockham Valves & Fittings, Box 2592, Birmingham 2, Ala.
Stoddard Industries, Inc., 3383 E. Layton Ave., Cudahy, Wis.
Stokes Molded Products, Div. of Electric Storage Battery Co., Taylor & Webster, Trenton 4, N. J.
Stout & Sons, David, 7016-7020 Manchester Blvd., St. Louis 17, Mo.
Stover Water Softener Co., 10 State Ave., St. Charles, Ill.
Stow Mfg. Co., 445 State St., Binghamton, N. Y.
Strahman Valves, Inc., Nicolet Ave., Florham Park, N. J.
Straitsville Brick Co., P. O. Box 381, New Straitsville, O.
Stratford Pipe Scalloper Co., 1105 Ewing Ave., Clearwater, Fla.
Stromberg Div., General Time Corp., Thomaston, Conn.
Strong, Carlisle & Hammond, 508 Sandusky St., Conneaut, O.
Structa-Lung Co., The, 36407 Euclid Ave., Willoughby, O.
Structural Fibers, Inc., Fifth Ave., Chardon, O.
Struthers-Dunn, Inc., Lamb's Rd., Pitman, N. J.
Struthers Wells Corp., Warren, Pa.
Sturtevant Co., P. A.. Addison, Ill.
Sudbury Laboratory, South Sudbury, Mass.
Sulflo, Inc., 1143 E. Jersey St., Elizabeth 4, N. J.
Sullivan Valve & Engineering Co., 923 Oregon Ave., Butte, Mont.
Summit Products Co., Uniontown, Pa.
Sumo Pumps, Inc., P. O. Box 983, 23 Brown House Rd., Stamford, Conn.
Sundial Electric Co., 130-15 89th Rd., Richmond Hill, N.Y.
Sundstrand Hydraulics, 2210 Harrison Ave., Rockford, Ill.
Sun-Fire Stoker Corp., New Albany, Ind.
Sun Oil Co., 1608 Walnut St., Philadelphia 3, Pa.
Sun-Ray Burner Mfg. Corp., 139-24 Queens Blvd., Jamaica 35, N. Y.
Sunwarm, Inc., P. O. Box 266, Kingsport, Tenn.
Super Radiator Corp., 6714 Walker St., St. Louis Park, Minneapolis 26, Minn.
Super Slugger Co., 1020 Broadway, Bedford, O.
Super Tool Co., 21650 Hoover Rd., Detroit 13, Mich.
Superior Clay Corp., The, Uhrichsville, O.
Superior Combustion Industries, Inc., Times Tower, Times Sq., New York 36, N. Y.
Superior Pneumatic & Mfg. Co., Inc., 13800 Enterprise Ave., Cleveland 35, O.
Superior Valve and Fittings Co., 1509 W. Liberty Ave., Pittsburgh 26, Pa.
Supersite Corp., 300 Seymour Ave., Derby, Conn.
Supreme Electric Products Corp., 194 Vassar St., Rochester 7, N. Y.
Surface Combustion Corp., 2375 Dorr St., Toledo 1, O.
Sutorbilt Corp., Subsidiary of Fuller Co., 2966 E. Victoria St., Compton, Calif.
Sutton Mfg. Co., 112 W. Wilson Ave., Norfolk, Va.
Swaby Mfg. Co., 1820 N. Major Ave., Chicago 39, Ill.
Swaine Mfg. Co., Fred J., 1300 N. Seventh St., St. Louis 6, Mo.
Swan Engineering Co., 22-58 Nelson St., Bloomfield, N.J.
Swan Humidifier Co., 149 Bath St., Ballston Spa, N. Y.
Swan Mfg. Co., 1801 W. 26th St., Vancouver, Wash.
Swartwout Fabricators, Inc., 100 East North St., Kokomo, Ind.
Swepco Tube Corp., 1 Clifton Blvd., Clifton, N. J.
Swift & Co., Adhesive Products Dept., 4115 S. Packers Ave., Chicago 9, Ill.
Swift Lubricator Co., Inc., 714 Lake St., Elmira, N. Y.
Swift Mfg. Co., Inc., 13595 Helen, Detroit 12, Mich.
Swiss Colony Engineering Div., 1301-18th St., Monroe, Wis.
Symmons Mfg. Co., 445 C St., Boston 10, Mass.
Synchronous Flame, Inc., Walworth, Wis.
Synchro-Start Products, Inc., 8151 N. Ridgeway Ave., Skokie, Ill.
Syncromatic Corp., 1141 Tenth St., Watertown, Wis.
Syntron Co., 161 Lexington Ave., Homer City, Pa.
Syrall Mfg. Co., 511 N. State St., Syracuse 3, N. Y.

T

Taber Pump Co., 291 Elm St., Buffalo 3, N. Y.
Taco Heaters, Inc., 1160 Cranston St., Cranston 9, R. I.
Taft-Jenkins Co., Inc., 27 Sargeant St., Holyoke, Mass.
Tagliabue Div., Marshalltown Mfg., Inc., 601 E. Nevada St., Marshalltown, Ia.
Taller & Cooper, Inc., 75 Front St., Brooklyn 1, N. Y.
Talon Tools, Inc., North Arlington, N. J.
Tamms Industries Co., 228 N. LaSalle St., Chicago 1, Ill.
Tankit Co., The, 560 Belmont Ave., Newark, N. J.
Tann Bearing Co., 2741 E. Congress, Detroit 7, Mich.
Tapecoat Co., The, 1523 Lyons St., Evanston, Ill.
Taylor Engineering Corp., 6500 Epworth Blvd., Detroit 10, Mich.
Taylor Forge & Pipe Wks., P. O. Box 485, Chicago 90, Ill.
Taylor Instrument Companies, 95 Ames St., Rochester 1, N. Y.
Taylor Sons Co., The Charles, 710 Burns St., Cincinnati 14, O.
Taylor-Winfield Corp., 1052 Mahoning Ave., N. W., Warren, O.
Technical Filter Co., 2719 S. Poplar Ave., Chicago, Ill.
Technical Tape Corp., 240 N. Ave., New Rochelle, N. Y.
Technical Ply-Woods Sales, 6756 Crandon Ave., Chicago 49, Ill.
Techniflex Div., Port Jervis, N. Y.
Techno Corp., 16 W. 5th St., Erie, Pa.
Tecumseh Products Co., Tecumseh, Mich.
Tedco Cooling Towers, Div. of Engineering & Development Co., Inc., 2406 S. 7th Blvd., St. Louis, Mo.
Tedd Company, The, P. O. Box 1621, Rockford, Ill.
Tejax Engineering Corp., P. O. Box 348, Pawtucket, R. I.
Telechron Timers and Motors, Clock & Timer Dept., General Electric Co., Homer Ave., Ashland, Mass.
Teleflex Industrial Products, Inc., P. O. Box 151, Boyertown, Pa.
Televance Corp., P. O. Box 3043, St. Louis 23, Mo.
Telsco Fittings Div., 5422 Redfield St., Dallas, Tex.
Temco, Inc., 4101 Charlotte, Nashville, Tenn.
Temperature Control, Inc., P. O. Box 1042, Atlanta, Ga.
Tempo Products Co., 6515 Carnegie Ave., Cleveland 3, O.
Temprite Products Corp., P. O. Box 72, E. Maple Rd., Birmingham, Mich.
Temtrol, Inc., Okarche, Okla.
Tennessee Coal & Iron Div., United States Steel Corp., P. O. Box 599, **Fairfield, Ala.**
Tennessee Plastics, Inc., P. O. Box 786, Johnson City, Tenn.
Tennessee Products and Chemical Corp., 2611 West End Ave., Nashville 5, Tenn.
Tenney Engineering, Inc., 1090 Springfield Rd., Union, N. J.
Terre Haute Boiler Works Co., 1140 Crawford, Terre Haute, Ind.
Terry Steam Turbine Co., The, P. O. Box 1200, Hartford 1, Conn.
Tesco Inc., 1403 E. 5th Court, Tulsa, Okla.
Texaco, Inc., 135 E. 42nd St., New York 17, N. Y.
Texas Instruments, Inc., 3609 Buffalo Speedway, Houston 6, Tex.
Texas Instruments Inc., Metals & Controls Div., 34 Forest St., Attleboro, Mass.
Texas Metal Fabricating Co., P. O. Box 7567, Houston 7, Tex.
Texas Vitrified Pipe Co., Mineral Wells, Tex.
Texsteam Corp., P. O. Drawer 9127, Houston 11, Tex.
Therm Air Mfg. Co., Peekskill, N. Y.
Thermac Co., 14296 E. 6th St., Corona, Calif.
Thermador Electrical Mfg. Co., Div. of Norris Thermador Corp., 5119 District Blvd., Los Angeles 22.
Thermal Engineering Corp., 2605 W. Dallas Ave., Houston 19, Tex.
Thermel, Inc., 9400 Robinson Rd., Franklin Park, Ill.
Thermo-Base Div., Gerwin Industries, Inc., 214 Spring St., Michigan City, Ind.
Therm-O-Disc, Inc., Mansfield, O.
Thermo Electric Co., Inc., Saddle Brook, N. J.
Thermoid Co., 200 Whitehead Road, Trenton, N. J.
Thermo King Corp., 314 W. 90th St., Minneapolis 20, Minn.
Thermold Products Co., Grandview, Mo.
Thermon Mfg. Co., 1017 Rosine St., Houston, Tex.
Thermo-Pak Boilers, Inc., 404 S. Palm Ave., Alhambra, Calif.
Thermo-Products, Inc., North Judson, Ind.
Thermo-Sound Products, Div. of Kittell-Lacy, Inc., 10816 E. Fawcett Ave., El Monte, Calif.
Therm-O-Stats Inc., Box 303, Chartley, Mass.
Thermotank, Inc., Air Products Div., 11191 Lappin Ave., Detroit 34, Mich.
Therm-O-Wheel, Inc., 50th & Vernon Aves., Long Island City, N. Y.
Thern Machine Co., 3760 W. Fourth St., Winona, Minn.
Thiokol Chemical Corp., 780 N. Clinton Ave., Trenton, N. J.
Thomas Co., Arthur H., Vine Street at Third, Philadelphia 5, Pa.
Thomas Flexible Coupling Co., Main Ave. & Biddle St., Warren, Pa.
Thomas Industries, Inc., Electric Sprayit Div., 1415-25 Illinois Ave., Sheboygan, Wis.
Thompson and Co., 1085 Allegheny Ave., Oakmont, Pa.
Thompson & Son Co., The Henry G., 277 Chapel St., New Haven, Conn.
Thompson Research & Mfg. Co., Davenport, Fla.
Thomson Electric Welder Co., 161 Pleasant St., Lynn, Mass.
Thor Power Tool Co., 175 N. State St., Aurora, Ill.
Thor Tool & Die Co., 865 Estabrook, San Leandro, Calif.
Thread-Ezy Mfg. Co., Corunna, Mich.
Threadwell Tap & Die Co., Greenfield, Mass.
Three Point Industries, 1821 Howard St., Evanston, Ill.
Thrush & Co., H. A., Peru, Ind.
Thwing-Albert Instrument Co., Penn and Pulaski Ave., Philadelphia 44, Pa.
Tierney Rotor Ventilator Co., 239 Fourth Ave., S., Minneapolis, Minn.
Timesaver Tools Co., 5130 Richmond Rd., Bedford Heights, O.
Timken Roller Bearing Co., The, 1835 Dueber Ave., S. W., Canton 6, O.
Tinnerman Corp., George A., 19920 Ingersoll Dr., Cleveland 16, O.
Tipptronics, Inc., Chagrin Falls, O.
Titeflex, Inc., 603 Hendee St., Springfield, Mass.
Titus Mfg. Corp., Box 810, Hiway 20 West, Waterloo, Ia.
Titusville Iron Wks. Co., The, Titusville, Pa.
Tjernlund Mfg. Co., 2140 Kasota Ave., St. Paul 14, Minn.
Todd Shipyards Corp., Products Div., Columbia & Halleck Sts., Brooklyn 31, N. Y.
Toledo Pipe Threading Machine Co., P. O. Box 1678, Toledo 3, O.
Tool Products Corp., 377 Old Falls Blvd., North Tonawanda, N.Y.
Torit Mfg. Co., 1133 Rankin St., St. Paul 16, Minn.
Tork Time Controls, Inc., 33 Grove St., Mt. Vernon, N. Y.
Torrington Co., The, **Bantam Bearings Div., South Bend 21, Ind.**
Torrington Mfg. Co., The, Torrington, Conn.
TOT Towers Co., P. O. Box 18012, 5220 Lawndale, Houston 23, Tex.
Toungate & Coats, P. O. Box 9156, Allandale Station, Austin 17, Tex.
Tracerlab, Inc., 1601 Trapelo Rd., Waltham 54, Mass.
Trade-Wind Div., Robbins & Myers, Inc., 7755 Paramount Place, Pico Rivera, Calif.
Trageser Copper Works, Inc., New York International Airport, Jamaica 30, N. Y.
Trane Co., The, La Crosse, Wis.
Trans-Plastics Corp., Inc., 6700 Morgan Ave., Cleveland 27, O.
Tranter Mfg. Inc., Lansing 4, Mich.
Trent, Inc., Leverington Ave. and Wilde St., Philadelphia 27, Pa.
Trent Tube Co., 498 S. Church St., East Troy, Wis.
Trerice Co., H. O., 1420 W. Lafayette Blvd., Detroit 16, Mich.
Triangle Conduit & Cable Co., Inc., Triangle & Jersey Aves., New **Brunswick, N. J.**
Triangle Engineering Co., 1309 Ashland, Houston 8, Tex.
Triangle Mfg. Co., 724 Division St., Oshkosh, Wis.
Trico Fuse Mfg. Co., 2948 N. 5th St., Milwaukee 12, Wis.
Trimont Mfg. Co., Div. of St. Pierre Chain Corp., 50 Frank St., Worcester, Mass.
Trimount Instrument Div., General Controls Co., 8080 McCormick Blvd., Skokie, Ill.
Trindl Products, Ltd., 1807-11 S. Clark St., Chicago 16, Ill.
Trion, Inc., 1000 Island Ave., McKees Rocks, Pa.
Triplex Heating Specialty Co., Inc., 252 N. Grant, Peru, Ind.
Tri-Rotor, Inc., 36 E. Lawton St., Torrington, Conn.
Trombetta Solenoid Corp., 329 N. Milwaukee St., Milwaukee 2, Wis.
Tropical Paint Co., 1244-82 W. 70th St., Cleveland 2, O.
Tropical Tape Div., 899 Country Club Circle, Ft. Lauderdale, Fla.
Truco Masonry Drilling Div., Wheel Trueing Tool Co., 3200 W. Davison, Detroit, Mich.
Truflo Fan Co., 523 Main St., Harmony, Pa.
Truscon Laboratories Div., Devoe & Raynolds Co., Inc., Caniff and Trunk R. R., Detroit 11, Mich.
Tru-Seal Div., Flick-Reedy Corp., 7N015 York Rd., Bensenville, Ill.
Tryco Products, Inc., Parcel Post Station Box No. 72, Westfield, Mass.
Tube Forgings of America, Inc., Foot S. W. Gibbs St., Portland 1, Ore.
Tube Manifold Corp., 415 Bryant St., North Tonawanda, N. Y.
Tube-Strut Corp., 2960 Marsh St., Los Angeles 39, Calif.
Tube Turns Div. of Chemetron Corp, 224 E. Broadway, Lousiville 1, Ky.
Tube Turns Plastics, Inc., 2929 Magazine St., Louisville 11, Ky.
Tubenfin Coil Co., 220 Broadway, Houston 12, Tex.
Tubing Seal-Cap Co., 808 W. Santa Anita, San Gabriel, Calif.
Tubular Div., The National Supply Co., P. O. Box 416, Pittsburgh 30, Pa.
Tuck-Aire Furnace Co., 2045 Evans Ave., San Francisco 24, Calif.
Tufflite Plastics, Inc., 19 Low St., Ballston Spa, N. Y.
Tulsa Canvas Products Co., Inc., P. O. Box 2072, Tulsa, Okla.
Turb-O-Heat, Inc., 1133 East 35th St., Brooklyn 10, N. Y.
Turco Products, Inc., P. O. Box 1055, Wilmington, Calif.
Turner Corp., 821-47 Park Ave., Sycamore, Ill.
Tuthill Pump Co., 939 E. 95th St., Chicago 19; Ill.
Tuttle & Bailey, Div. of Allied Thermal Corp., 215 Warren St., New Britain, Conn.
Tuttle Electric Products, Inc., Kirkland, Ill.
Tweco Products Inc., P. O. Box 666, Wichita 1, Kan.
Twin Disc Clutch Co., 1310 Preston, Rockford, Ill.
Typhoon Air Conditioning Co., Div. of Hupp Corp., 505 Carroll St., Brooklyn 15, N. Y.
Typhoon Heat Pump Div., Hupp Corp., 2001 Garcia Ave., P. O. Box 1123, Tampa, Fla.

U

[Also see "United States"]

U. S. Air Conditioning Corp., P. O. Box 360, Delaware, O.
U. S. Electrical Motors Inc., 200 E. Slauson Ave., Los Angeles 54.
U. S. Engineering & Mfg. Co., 3254 Lincoln Ave., Chicago 13, Ill.
U. S. Expansion Bolt Co., P. O. Box 827, State St. & P.R.R., York, Pa.
U. S. Plug & Fitting Co., Wellington, O.
U-Con Co., P. O. Box 1607, Annapolis, Md.
Uehling Instrument Co., 473 Getty Ave., Paterson 3, N. J.
Ulrich Mfg. Co., Bump Pump Div., Roanoke, Ill.
Uni-Crest Div., United Cork Companies, 1 Central Ave., Kearney, N. J.
Unifilter Co., 43800 Grand River Ave., Novi, Mich.
Uniflex Mfg. & Eng., Inc., 5545 E. Slauson Ave., Los Angeles 22, Calif.
Uniflow Mfg. Co., E. Lake Rd., Erie, Pa.
Uniflow Valve Corp., 19 Quine St., Cranford, N. J.
Unimax Switch Div., W. L. Maxson Corp., Ives Rd., Wallingford, Conn.
Union Carbide Chemicals Co., Div. of Union Carbide Corp., 270 Park Ave., New York 17, N. Y.
Union Carbide Development Co., Div. of Union Carbide Corp., New York 17, N.Y.
Union Carbide Plastics Co., Div. of Union Carbide Corp., 270 Park Ave., New York 17, N.Y.
Union Chill Mat Co., Box 253, Saxonburg, Pa.
Union Damper Co., Union, Ill.
Union Electric & Mfg. Co., 1057 Summit Ave., Jersey City, N. J.
Union Iron Wks., Div. of Riley Stoker Corp., 1500 Cascade St., Erie, Pa.

Union Malleable Mfg. Co., Clark St., Ashland, O.
Union Metal Wks. Co., Inc., 128 Carter St., Chelsea 50, Mass.
Union Pump Co., 87 Capital Ave., S. W., Battle Creek, Mich.
Union Steel Chest Corp., LeRoy, N. Y.
Union Steel Corp., Union, N. J.
Unistrut Products Co., 933 W. Washington Blvd., Chicago 7, Ill.
United Centrifugal Pumps, 580 Second St., Oakland, Calif.
United Cork Companies, 1 Central Ave., Kearny, N. J.
United Electric Co., 501 Galveston, Wichita Falls, Tex.
United Electric Controls Co., 85 School St., Watertown, Mass.
United Instrument Co., 574 President St., Brooklyn 15, N. Y.
United Machinery Sales Co., 1741 W. 91st St., Chicago 20, Ill.
United Metal Hose Co., Inc., 36-01 43rd Ave., Long Island City 1, N. Y.
United Mineral & Chemical Corp., 16 Hudson St., New York 13, N. Y.
United Sensor & Control Corp., P. O. Box 127, Glastonbury, Conn.
United Sheet Metal Co., Inc., 883 N. Cassady Ave., Columbus 19, O.
United Specialties, Inc., P.O. Box 698, El Dorado, Ark.
[Also see "U. S."]
United States Concrete Pipe Co., Universal Sewer Pipe Div., 1500 Union Commerce Bldg., Cleveland, O.
United States Electrical Tool Co., 3640 Llewellyn St., Cincinnati 23, O.
United States Gasket Co., Plastics Div. of Garlock, Inc., 602 N. 10th St., Camden, N.J.
United States Gauge Div. of American Machine and Metals, Inc., Sellersville, Pa.
United States Gypsum Co., 300 W. Adams St., Chicago 6, Ill.
United States Mineral Wool Co., Stanhope, N. J.
United States Pipe & Foundry Co., Birmingham, Ala.
United States Register Co., Burnham St., Battle Creek, Mich.
United States Rubber Co., 1230 Ave. of the Americas, New York 20.
United States Steel Corp., 525 Wm. Penn Place Bldg., Pittsburgh 30, Pa.
United States Stoneware Co., 60 E. 42nd St., New York 17, N. Y.
United States Stoneware Co., Plastics & Synthetics Div., Akron 9, O.
United Wire & Supply Corp., 1497 Elmwood Ave., Cranston, R. I.
Universal Controls Corp., P. O. Box 13122, Dallas 20, Tex.
Universal Cutting & Welding Equipment Mfg. Co., 2850 Ravenswood Rd., Ft. Lauderdale, Fla.
Universal Diffuser Corp., 38 Marbledale Rd., Tuckahoe, N. Y.
Universal Dynamics Corp., P. O. Box 6211, Arlington 6, Va.
Universal Electric Co., Owosso, Mich.
Universal Gear Service Corp., 1301 E. McNichols Rd., Detroit 3, Mich.
Universal Instrument Co., 3807 Bunker Hill Rd., Brentwood, Md.
Universal Metal Hose Co., 2133 S. Kedzie Ave., Chicago, Ill.
Universal Valve Co., P. O. Box 444, Elizabeth, N. J.
Universal Water Softener Co., Geneva, Ill.
Universal Welder Corp., 3537 Lee Rd., Cleveland 20, O.
Uno Ventilator Co., 1236 Eastern Ave., Malden 48, Mass.
Up-Right Scaffolds, 1013 Pardee, Berkeley, Calif.
Urethane Foam Div., Rainbow Industries, Inc., Butler, Pa.
Utah Hydro Corp., 751 W. 8th So., Salt Lake City 4, Utah
Utica Products, Inc., Utica 4, N. Y.
Utica Radiator Corp., 2201 Dwyer Ave., Utica 2, N. Y.
Utility Fan Corp., Div. of Utility Appliance Corp., 911 E. 59th St., Los Angeles 1, Calif.

V

V. & E. Products, Inc., Schuylkill Haven, Pa.
V-Belt Clutch Co., 418 N. Western Ave., Los Angeles 4, Calif.
Vacu-Blast Co., Inc., P. O. Box 885, Belmont, Calif.
Vacuum-Electronic Corp., Terminal Dr., Plainview, L.I., N.Y.
Vacuum Gas Burner Co., Olean, N. Y.
Valco, Inc., 1410 West St., Cincinnati 15, O.
Valcor Engineering Corp., Dept. 717, Carnegie Ave., Kenilworth, N. J.
Valdura Div., American-Marietta Co., 101 E. Ontario St., Chicago 11, Ill.
Valley Foundry & Machine Works, Inc., Fresno, Calif.
Valveblower Co. of Calif., 13729 E. Rosecrans Ave., Santa Fe Springs, Calif.
Valve Controls Co., 11120 Cumpston, North Hollywood, Calif.
Valves, Inc., F. G., 6450 W. River Parkway, Milwaukee, Wis.
Vanderman Mfg. Co., Mansfield Ave., Willimantic, Conn.
Van Dorn Iron Works Co., Infra-Red Div., 2685 E. 79th St., Cleveland, O.
Van Noorden Co., E., 100 Magazine St., Boston 19, Mass.
Van-Packer Co., Div. of the Flintkote Co., 1232 McKinley Ave., Chicago Heights, Ill.
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
Vapor Heating Corp., 80 E. Jackson Blvd., Chicago 4, Ill.
Velan Valve Corp., Beekmantown Rd., Plattsburg, N. Y.
Ventco, Inc., 1210 Tuam, P. O. Box 8038, Houston 4, Tex.
Ventfabrics, Inc., 640 N. Kedzie Ave., Chicago 12, Ill.
Ventil-Aire Corp., 1815 Decatur St., Ridgewood 27, N. Y.
Ventilouvre Co., Inc., The, Marietta, O.
Vernon Tool Co., Ltd., 1109 Meridian Ave., Alhambra, Calif.
Verson Allsteel Press Co., 9302 Kenwood Ave., Chicago 19, Ill.
Verson Mfg. Co., 8300 S. Central Expressway, Dallas, Tex.
Vibration Eliminator Co., 10-28 47th Ave., Long Island City 1, N. Y.
Vibration Mountings and Controls, Inc., 98-25 50th Ave., Corona 68, N. Y.
Vic Mfg. Co., 1313 Hawthorne Ave., Minneapolis 3, Minn.
Victaulic Co. of America, P. O. Box 509, Elizabeth, N. J.
Victor Equipment Co., Welding Equipment Div., 844 Folsom St., San Francisco 7, Calif.
Victor Products Corp., 2633 Belmont Ave., Chicago 18, Ill.
Victory Engineering Corp., 118 Springfield Rd., Union, N. J.
Viking Air Products Div. of The Lau Blower Co., 5601 Walworth Ave., Cleveland, O.
Viking Copper Tube Co., 16700 St. Clair Ave., Cleveland, O.
Viking Mfg. Corp., 1747 Chester Ave., Cleveland 14, O.
Viking Pump Co., Fourth and Rouse Sts., Cedar Falls 1, Ia.
Viking Research Corp., 618 Indiana Ave., Sheboygan, Wis.
Viking Shear Co., 1901 Raspberry St., Erie, Pa.
Vilter Mfg. Co., The, 2148 S. First St., Milwaukee 7, Wis.
Vimasco Corp., P. O. Box 465, Nitro, W. Va.
Virginia Smelting Co., West Norfolk, Va.
Vis-A-Plug, Inc., P. O. Box 100, King of Prussia, Pa.
Vita-Aire Process Co., Inc., Milwaukee, Wis.
Vogt Machine Co., Henry, 1000 W. Ormsby St., Louisville 10, Ky.
Vornado, Inc., 174 Passaic St., Garfield, N.J.
Vortox Company, 121 S. Indian Hill Blvd., Claremont, Calif.
Voss Co., Inc., J. H. H., 785 E. 144th St., Corner of Wales Ave., New York 54, N. Y.
Voss Engineering, Inc., 5649 North Ravenswood Ave., Chicago 26, Ill.
Vulcan Electric Co., 88 Holten St., Danvers, Mass.
Vulcan Radiator Co., 775 Capitol Ave., Hartford 6, Conn.

W

W. G. B. Oil Clarifier, Inc., Kingston, N. Y.
W-K-M, Div. of ACF Industries, Inc., P. O. Box 2117, Houston, Tex.
Waage Electric, Inc., 720 Colfax Ave., Kenilworth, N. J.
Wabash Corp., 2318 S. Western Ave., Chicago 8, Ill.
Wachs Co., E. H., The, 1525 N. Dayton St., Chicago 22, Ill.
Waco Steel Scaffolding, Inc., 630 N. Valley Mills Dr., Waco, Tex.
Wade Mfg. Co., Elgin, Ill.
Wadsworth Electric Mfg. Co., Inc., Covington, Ky.
Wagner Awning & Mfg. Co., 2658 Scranton Rd., Cleveland, O.
Wagner Bros., Inc., Equipment Div., 7800 Dix Rd., Detroit, Mich.
Wagner Electric Corp., 6370 Plymouth Ave., St. Louis 33, Mo.
Wakefield Co., The, Vermilion, O.
Waldron Couplings, Waldron-Hartig Div., Midland-Ross Corp., Box 791, New Brunswick, N. J.
Walker Jamar Co., 365 S. First Ave., E., Duluth, Minn.
Walker Mfg. & Sales Co., 1720 Penn St., St. Joseph, Mo.
Wall Tube and Metal Products Co., P. O. Box 330, Newport, Tenn.
Wallace Co., William, Metalbestos Div., Belmont, Calif.
Wallace Products Corp., B. E., Exton 20, Pa.
Wallace Supplies Mfg. Co., 1304-10 Diversey Pkwy., Chicago 14, Ill.
Wallace & Tiernan Incorporated, 25 Main St., Belleville 9, N. J.
Walsh-Hannon-Gladwin, Inc., 755 Boylston St., Boston 16, Mass.
Walton Co., Box 5, Elmwood Branch, Hartford 10, Conn.
Walton Laboratories, Inc., 1186 Grove St., Irvington 11, N. J.
Walworth Co., 750 Third Ave., New York 17, N. Y.
Wanson Corp., Charles and Juniata Sts., Lewiston, Pa.
Ward Foundries, Inc., J. P., Blossburg, Pa.
Ward Leonard Electric Co., 24 South St., Mt. Vernon, N. Y.
Ware Coupling & Nipple Co., Ware, Mass.
Warner Electric Brake & Clutch Co., Beloit, Wis.
Warner Lewis Co., Div. of Fram Corp., 2929 E. Apache, Tulsa, Okla.
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Warren Refining & Chemical Co., The, 5151 Denison Ave., Cleveland 2, O.
Washington Steel Corp., Griffith Ave., Washington, Pa.
Wassco Glo-Melt Div., American Electrical Heater Co., 6110 Cass Ave., Detroit 2, Mich.
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Water Cooling Equipment Co., 8601 New Hampshire, St. Louis 23, Mo.
Water Refining Co., 104 Manhattan St., Middletown, O.
Water Service Laboratories, Inc., 615 W. 131 St., New York 27.
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Wheeling Machine Products Co., Wheeling, W. Va.
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XXth Century Heating & Ventilating Co., The, 96 Ira Ave., Akron 1, O.
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Yeomans Bros. Co., 2000-5 N. Ruby St., Melrose Park, Ill.
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York-Shipley, Inc., 500 Jessop Place, Box 349, York, Pa.
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Young Radiator Co., 709 S. Marquette St., Racine, Wis.
Young Regulator Co., 20910 Miles Ave., Cleveland 28, O.
Youngstown Sheet & Tube Co., P. O. Box 900, Youngstown 1, O.
Youngstown Welding & Engrg. Co., The, 3714 Oakwood, Youngstown 9, O.
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Yula Corp., 330 Bryant Ave., Bronx, N. Y.
Zack Co., The, 4600 West 12th Place, Chicago 50, Ill.
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Zalo Mfg. Co., 4893 Van Epps Rd., Cleveland 9, O.
Zatko Metal Products Co., 20850 St. Clair Ave., Euclid 17, O.
Zeh & Hahnemann Co., 182-200 Vanderpool St., Newark 5, N. J.
Zell-Aire Corp., Reading, Pa.
Zenith Electric Co., 152 W. Walton St., Chicago 10, Ill.
Ziegler & Co., G. S., Great Neck, N. Y.
Zimmerman Packing, 2768 Highland Ave., Cincinnati 12, O.
Zingheim Co., William C., 5050 Lake St., Chicago 44, Ill.
Zink Co., John, 4401 S. Peoria, Tulsa 5, Okla.
Zippertubing Co., 13000 S. Broadway, Los Angeles 61, Calif.
Zone-Heat Regulator Co., Box 188, Garrettsville, O.
Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill.
Zurn Industries, Inc., 1810 Pittsburgh Ave., Erie, Pa.

Index to Advertisers in this issue appears on page 2d of this yellow Directory Section

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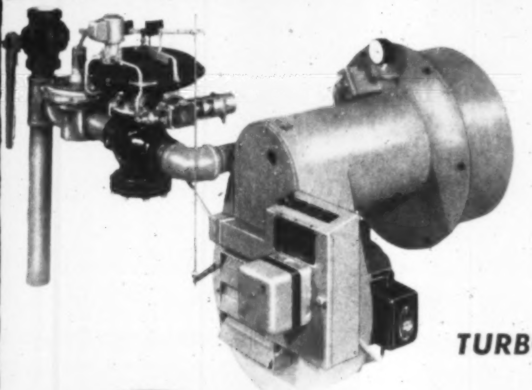
A Complete Line of Combustion Equipment

FORCED DRAFT



MODEL FGR
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BTU/HR

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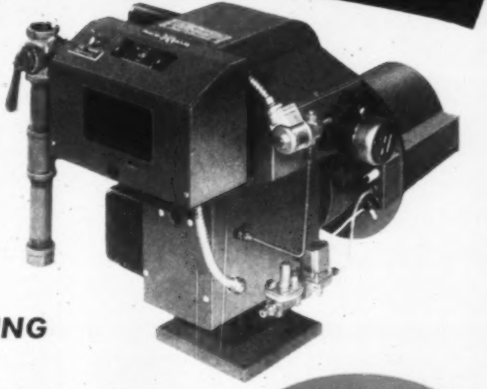
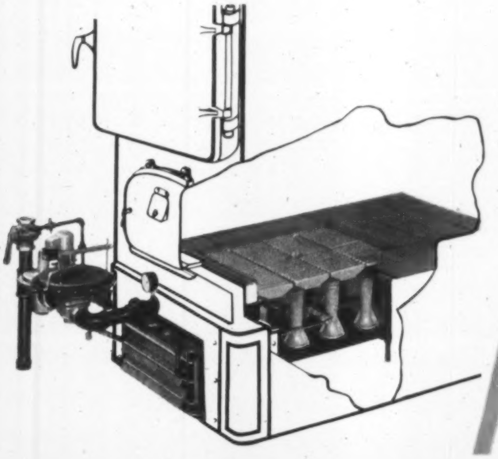
Gas, oil, or combination burner. No stack required on boilers equipped for pressure firing.



MODEL R
Capacities
up to 2¼ million
BTU/HR

ATMOSPHERIC

BLUE LINE Flame upshot burner, natural or L-P gas. Capacities up to 8 million BTU/hr.



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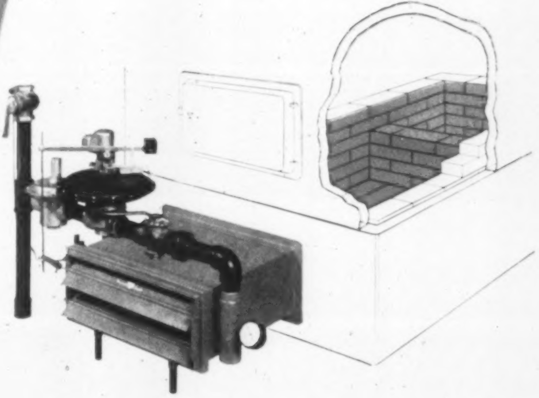

***PLANNED — Factory assembled, pre-wired for "Bolt-on" installation.**

***PERFORMANCE — Custom matched to individual boilers for quiet, efficient operation.**

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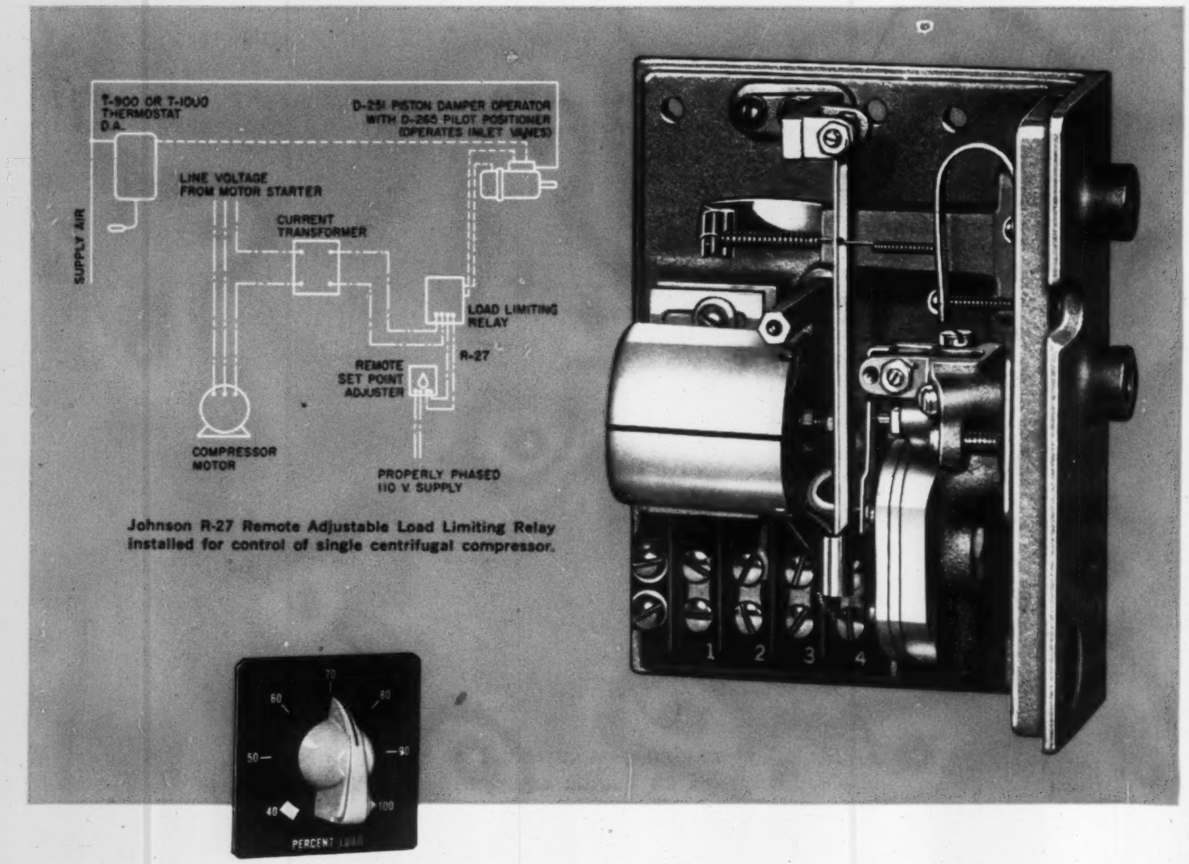
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D.A.
D-251 PISTON DAMPER OPERATOR
WITH D-265 PILOT POSITIONER
(OPERATES INLET VANES)
SUPPLY AIR
LINE VOLTAGE
FROM MOTOR STARTER
CURRENT
TRANSFORMER
LOAD LIMITING
RELAY
R-27
REMOTE
SET POINT
ADJUSTER
COMPRESSOR
MOTOR
PROPERLY PHASED
110 V. SUPPLY
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2
3
4
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50
60
70
80
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Johnson R-27 Remote Adjustable Load Limiting Relay installed for control of single centrifugal compressor.

New JOHNSON R-27 remote adjustable load limiting relay

For Positive Protection Against Motor Overloading *PLUS* The Convenience Of Remote Adjustment

- An outstanding new limiting device for use with pneumatic control systems. May be applied to all makes of centrifugal refrigeration compressors, as well as to pumps, fans, and electric heating systems.
- Provides efficient, positive protection against costly motor overloading. Prevents failures and damage to equipment.
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